

# **TRAFFIC CONTROLS FOR SCHOOL ZONES**

**PART 7 SUPPLEMENT TO  
THE MANUAL ON UNIFORM  
TRAFFIC CONTROL DEVICES  
MILLENNIUM EDITION**

**UTAH DEPARTMENT OF  
TRANSPORTATION**

**TRAFFIC AND SAFETY DIVISION**

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## PURPOSE

### **SUPPORT:**

To assure uniform design and application of all types of traffic control devices, Utah Code Annotated (UCA) Section 41-6-20(1), requires the Utah Transportation Commission to adopt a manual and specifications for a uniform system of traffic control devices. The manual adopted (in UCA R927-1-1) is the "Manual on Uniform Traffic Control Devices, Millennium Edition," a Federal Highway Administration publication. In addition, UCA Section 41-6-20(2), requires the Utah Transportation Commission to adopt a manual and specifications for a uniform system of traffic-control devices, school crossing guards, and child access routing plans for school crossing zones. This Part 7 Supplement to the Manual on Uniform Traffic Control Devices (MUTCD) satisfies that requirement.

The intent of this supplement to the MUTCD is to standardize, as much as possible, applications of traffic control devices and crossing guards in School Zones on all public highways in the State of Utah.

This supplement is divided into sections that correspond to the applicable sections in the MUTCD. For the convenience of the user, those sections of Part 7 of the MUTCD not changed for this supplement are also included.

The federal final rule adopted January 17, 2001 as the compliance date for the Millennium edition of the MUTCD.

### **STANDARD:**

**For installation of new devices or replacement of devices, compliance shall be effective immediately. For devices in good condition, and a notification, the following list of special compliance dates shall apply.**

- A. Section 7A.02. Notification to UDOT of routing plans that require students to cross railroad tracks - July 1, 2004;**
- B. Section 7A.12. School Advance Warning (S1-1) sign - removal of School Advance Warning signs from crosswalks at colleges and universities - August 1, 2008;**
- C. Section 7B.07. Fluorescent yellow-green background - upgrading signs listed in 7B.07 to have a fluorescent yellow-green background - August 1, 2008;**
- D. Section 7B.07. Non-School Zone signs with fluorescent yellow-green background - replacement of all existing non-School Zone fluorescent yellow-green signs with standard colors - August 1, 2008;**

- E. Section 7B.08. AHEAD (W16-9p) plaque - addition of the AHEAD (W16-9p) plaque below the School Advance Warning (S1-1) sign - August 1, 2008;**
- F. Section 7B.09. School Advance Warning (S1-1) sign - elimination of crosswalk lines from Crossing signs and use of the Diagonal Arrow (W16-7) plaque - August 1, 2008; and,**
- G. Section 7B.11. School Speed Limit assembly - shall meet the specifications of UDOT Standard Drawing SN 2 (post-mounted) or SN 3 (overhead) - August 1, 2008.**

**Where differences occur between the MUTCD and this Supplement, in language or intent, this Supplement shall take precedence.**

## CHAPTER 7A. GENERAL

### Section 7A.01 Need for Standards

#### **STANDARD:**

In accordance with UCA 53A-1a-108(1), each public school, in consultation with its local school board, shall establish a School Community Council at the school building level. Each School Community Council shall consist of school employees, including the school's principal, and parents or guardians of students who are attending the school. Parents or guardians who are employed at the school shall be considered school employees. The School Community Council shall consist of, at a minimum, 4 parents and 3 employees (including principal) for middle, junior high and elementary schools, and 6 parents and 5 employees (including principal) for high schools. Additional details concerning the makeup of the Council described above are outlined in UCA 53A-1a-108. Among other responsibilities outlined in UCA 53A-1a-108(2)(a), School Community Councils shall establish child access routing plans for each elementary, middle, and junior high school within the district. The School Community Council shall submit those child access routing plans to the School Traffic Safety Committee. The child access routing plan shall be prepared in accordance with UCA 53A-3-402(16)(e). The School Community Council shall meet on a semi-annual basis as a minimum.

UCA Section 53A-3-402(16), requires that each school board establish a School Traffic Safety Committee composed of members from the district's schools and PTAs, the city or county, state or local law enforcement, and state or local traffic engineering.

Problems or suggestions from parents, teachers, or school administrators involving school traffic safety shall be submitted to the School Traffic Safety Committee for review and recommendations. The School Traffic Safety Committee shall meet on an annual basis as a minimum.

#### **OPTION:**

Each School Traffic Safety Committee may establish subcommittees as needed for each district or school.

#### **SUPPORT:**

The School Traffic Safety Committee handles specific problems and issues relating to school trip safety for each school in the district. The Committee reviews the child access routing plans prepared by the School Community Councils. When satisfied with those plans, the School Traffic Safety Committee submits each child access routing plan to the appropriate Utah Department of Transportation Regional office, and to all affected municipalities. Please see Appendix D for UDOT Region contact information, including a map of the Regions to determine which Region should receive the child access routing plan. The Committee also recommends school traffic safety improvements, boundary changes for safety, and school safety program criteria.

## **Section 7A.02 School Routes and Established School Crossings**

### **STANDARD:**

The School Community Council for each elementary school shall prepare, and update annually, a child access routing plan. The plan shall show, in map form with text description as a minimum, the walking routes on the street system within the school boundaries, the school location, existing traffic controls, and established school zones. The map shall be readable in black and white print. The plan also shall address the loading and unloading areas for students who ride the bus or arrive at school by another method of transportation. An explanation of the plan, instruction to parents to walk the route with their children, and an outline of areas of concern shall also be included. Each plan shall be reviewed annually by the District's School Traffic Safety Committee. After review by the Committee, the plan shall be sent to the appropriate local and state highway jurisdictions each year before July 1. The child access routing plan shall also be sent, at the beginning of each school year, to parents whose children attend the elementary school. Parents of students who begin attending a school during a school year shall also be provided a copy of the child access routing plan. Principals shall be responsible for distributing the child access routing plans to parents.

### **SUPPORT:**

A typical child access routing plan map is shown in Figure 7A-1.

### **STANDARD:**

Each elementary school shall, as a minimum, present a traffic safety program to its students annually. The program shall include instruction on safe pedestrian and bicycle behavior and the limitations of drivers and traffic control devices.

Each middle and junior high school shall prepare and update annually a child access routing plan. The plan shall show, as a minimum, the school crossings on major highways. The plan shall be submitted to the appropriate local and state highway jurisdictions each year before July 1 of each year.

If a school provides hazardous busing for students within a geographical area, an alternative walking route shall not be shown on the child access routing plan in that area.

### **OPTION:**

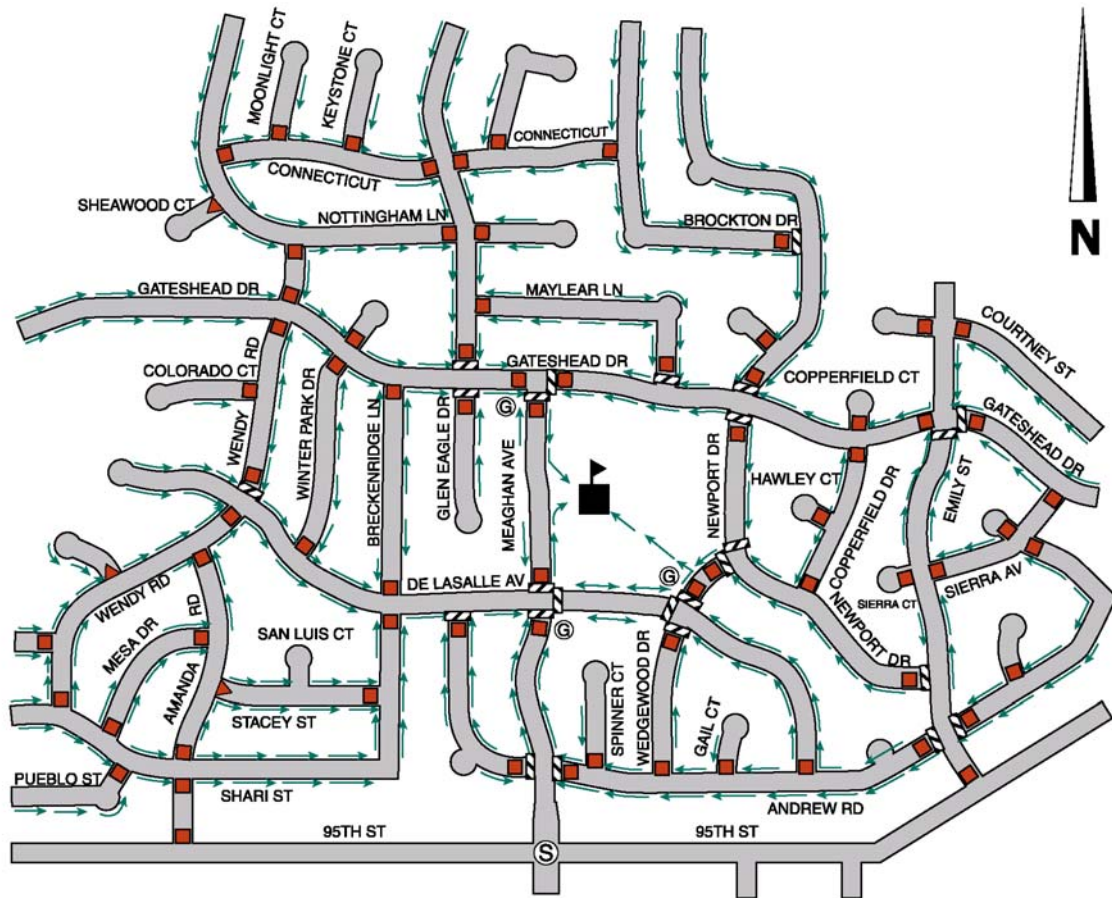
Middle and junior high school child access routing plans may include any elementary school child access routing plans within the middle/junior high school boundaries.

Each high school may also prepare a child access routing plan. High school child access routing plans may include any elementary, middle, or junior high child access routing plans within the high school boundaries.








**STANDARD:**

A School Zone (see definition in Section 7A.03) shall be placed for a high school only after a child access routing plan detailing each proposed School Zone has been approved by the School Traffic Safety Committee for that high school and submitted to UDOT and the local municipality.

Figure 7A-1. Typical Child Access Routing Plan Map



Legend

- |   |                  |   |                         |
|---|------------------|---|-------------------------|
|  | School           |  | Signalized Intersection |
|  | Marked Crosswalk |  | STOP Sign Approach      |
|  | Crossing Guard   |  | YIELD Sign Approach     |
|   |                  |  | Pedestrian Route        |

**STANDARD:**

Following the yearly review of child access routing plans, school districts shall notify UDOT when a route on a child access routing plan crosses a rail line on any road (state jurisdiction or otherwise). The notification shall be made whether the rail line is judged to be active or inactive. The notification shall be made to the UDOT Chief Railroad and Utilities Engineer at the address given in Appendix D.

**Section 7A.03 School Crossing Control Criteria**

**SUPPORT:**

Alternate gaps and blockages are inherent in the traffic stream and are different at each crossing location. For safety, students should wait for a gap in traffic that is of sufficient duration to permit reasonably safe crossing. When the delay between the occurrence of adequate gaps becomes excessive, students might become impatient and endanger themselves by attempting to cross the street during an inadequate gap.

**STANDARD:**

A School Zone shall be defined as a School Crosswalk, a Reduced Speed School Zone, a Narrow School Route, an Abutting School Zone, or an On-Premise School Bus Loading Zone. School Zones shall only be located at elementary, middle, junior high, and high schools.

A School Zone shall not be installed unless warranted per this section.

A School Crosswalk shall be defined as a marked crosswalk, including the approach to the crosswalk and associated signing. All School Crosswalks shall be designated on an approved child access routing plan. A School Crosswalk shall not have a Reduced Speed School Zone associated with it.

**GUIDANCE:**

A School Crosswalk should be used if warranted per this section.

**STANDARD:**

A School Crosswalk shall be warranted when the volume of school children exceeds 10 students during a period extending from not earlier than 45 minutes before school starts until 15 minutes after school starts, or a period from 15 minutes before the end of school to 45 minutes after school ends and the street average daily traffic (ADT) exceeds 500 vehicles.

**OPTION:**

The volume of school children in the Standard above may be determined by considering both counts and projections.

**STANDARD:**

If projections are used to determine the volume of school children at a proposed School Crosswalk, an engineering study shall be performed to verify the projections. Supporting data for the study shall include, as a minimum, enrollment information from the school district and a survey of affected parents to define anticipated usage of the proposed School Crosswalk.

A School Crosswalk shall not be installed within 600 feet of another School Crosswalk, a school crosswalk associated with a Reduced Speed School Zone, or a pedestrian crosswalk.

School Crosswalks shall not be installed at any location that has inadequate stopping sight distance as indicated in the most recent edition of "A Policy on Geometric Design of Highways and Streets," American Association of State Highway and Transportation Officials (AASHTO), which edition is incorporated by reference.

The signing for a School Crosswalk shall include the School Advance Warning (S1-1) sign with supplementary plaque(s) and the School Crosswalk Warning assembly (see Sections 7B.08 and 7B.09). Signing and marking of a School Crosswalk shall be as shown in Appendix A, Typical Applications, Sheets A1 through A4.

A Reduced Speed School Zone shall be defined as an area in advance of a school crosswalk, designated on the school child access routing plan, extending from a School Advance Warning (S1-1) sign followed by a School Speed Limit assembly to an END SCHOOL ZONE (S5-2) sign. The Reduced Speed School Zone shall be in-force while the School Speed Limit assembly is operating.

**GUIDANCE:**

A Reduced Speed School Zone should be used if warranted per this section.

**STANDARD:**

A Reduced Speed School Zone shall be warranted when all of the following requirements are met:

- A. The warrant for installation of a School Crosswalk (see Standard, this Section);
- B. The "Requirements for School Crosswalks, Reduced Speed School Zones, and Crossing Guards," contained in Appendix B1; and,
- C. The warrant for installation of a Reduced Speed School Zone, contained in Appendix C.

Existing Reduced Speed School Zones that do not meet requirements A, B, and C above shall be removed.

The signing for a Reduced Speed School Zone shall include the School Advance Warning (S1-1) sign with supplementary plaque(s), the School Speed Limit assembly, the School Crosswalk Warning assembly and the END SCHOOL ZONE (S5-2) sign, (see Sections

**7B.08, 7B.09, 7B.11, and 7B.13). Signing and marking of a Reduced Speed School Zone shall be as shown in Appendix A, Typical Applications, Sheets A5 through A8.**

**Except as noted in the Option below, a Reduced Speed School Zone shall not be installed on an approach to an intersection controlled by a traffic signal or by a STOP (R1-1) sign. Existing Reduced Speed School Zones not meeting the Option below shall be removed.**

**OPTION:**

A Reduced Speed School Zone may be installed, or may be allowed to remain at a signalized or stop-controlled intersection as a mitigation measure for concerns relating to sight distance, grade, or other critical issues, determined by an engineering study.

**STANDARD:**

**Installation of an Overhead School Speed Limit assembly in a Reduced Speed School Zone shall be in accordance with the requirements in Appendix B2 and Section 7B.11. Controlling local jurisdictions shall be responsible to apply the warrant process in Appendix B2 for Overhead School Speed Limit assemblies on non-state routes.**

**On state routes, requests from local jurisdictions or school districts for Overhead School Speed Limit assemblies shall be submitted to the appropriate UDOT Region office (see Appendix D for contact information). After screening each request using the process in Appendix B2, the Region shall forward requests that meet the criteria to the UDOT Engineer for Traffic and Safety. The Traffic and Safety Division shall:**

- A. Establish priorities for funding Overhead School Speed Limit assembly requests;**
- B. Program Overhead School Speed Limit assembly projects according to priorities and available funding; and,**
- C. Initiate agreements on each location according to the following guidelines:**
  - 1. Design and installation shall be the responsibility of the Traffic and Safety Division;**
  - 2. Maintenance of the Overhead School Speed Limit assembly shall be the responsibility of UDOT;**
  - 3. Power and operating costs shall be the responsibility of the local agency; and,**
  - 4. Overhead School Speed Limit assemblies at new schools shall not be funded, in part or in whole, by UDOT.**

**Overhead School Speed Limit assemblies shall not be installed in a Reduced Speed School Zone on an approach to a signalized intersection.**

**OPTION:**

An existing Overhead School Speed Limit assembly on an approach to an intersection upgraded to signalized control may be allowed to remain in place based on sight distance, grade, or other critical issues determined by an engineering study.

**STANDARD:**

If an existing Overhead School Speed Limit assembly is allowed to remain at an intersection upgraded to signalized control, the Overhead School Speed Limit assembly shall be located at least 300-feet from the stop line at the intersection.

A Narrow School Route shall be defined as a school route designated in a child access routing plan where there are no continuous sidewalks and the paved shoulders of the existing highway are less than three feet wide.

**OPTION:**

A Narrow School Route may be used if warranted per this section.

**STANDARD:**

A Narrow School Route shall be warranted when the School Traffic Safety Committee has determined that boundary changes, alternate school routes, or supplemental methods of transportation are not feasible. Narrow School Routes shall be reviewed by the School Traffic Safety Committee one year after installation and on an annual basis thereafter. The maximum length of a Narrow School Route shall be one mile in urban areas and two miles in rural areas.

If used, the signing for a Narrow School Route shall include the School Advance Warning (S1-1) sign with the NEXT X MILE(S) (W7-3a) plaque (see Section 7B.08). The distance shall be displayed in ¼-mile increments up to a maximum of one mile in urban areas and in ½-mile increments up to a maximum of two miles in rural areas. Signing and marking of a Narrow School Route shall be as shown in Appendix A, Typical Applications, Sheets A9.

**GUIDANCE:**

A Narrow School Route should not be installed as a permanent substitute for sidewalks or pavement widening in urban areas.

**STANDARD:**

An Abutting School Zone shall be defined as an area adjacent to school buildings or grounds, including the approach to such areas, with no associated School Crosswalks or Reduced Speed School Zones.

**OPTION:**

An Abutting School Zone may be used.

**STANDARD:**

If used, signing for an Abutting School Zone shall include the School Advance Warning (S1-1) sign, and shall not be supplemented with the AHEAD (W16-9p) plaque. For year-round schools, the School Advance Warning (S1-1) sign shall be supplemented with the ALL YEAR (SS1-1) plaque (see Section 7B.08 and Appendix A, Typical Applications, Sheets A10).

**An On-Premise School Bus Loading Zone shall be defined as an area on school property designated for the loading and unloading of students from school buses, including the associated signing and pavement markings. All On-Premise School Bus Loading Zones shall be identified on the school's child access routing plan.**

**With the exception of the option below, On-Premise School Bus Loading Zones shall:**

- A. be separate from private vehicle loading and unloading areas;**
- B. be located so that students are not required to cross roadways or parking lot areas to access the school;**
- C. be located such that buses are not required to back up; and,**
- D. be at least 12-feet wide.**

**All newly constructed schools shall meet the standard for On-Premise School Bus Loading Zones.**

**OPTION:**

Existing On-Premise School Bus Loading Zones may be allowed exceptions to Standards A through D above if those zones are demonstrated by the School Community Council to the School Traffic Safety Committee to have unusual conditions.

**Section 7A.04 Scope**

**STANDARD:**

**Part 7 sets forth basic principles and prescribes standards that shall be followed in the design, application and installation, and maintenance of all traffic control devices and other controls required for the special pedestrian conditions in School Zones. Such devices and controls include signs, signals, markings, adult crossing guards, student patrols, and grade-separated crossings.**

**Portable school signs shall not be used.**

**SUPPORT:**

Requirements discussed in Chapter 2A and Section 2B.05 are applicable in School Zones.

**Section 7A.05 Application of Standards**

**SUPPORT:**

Sections 1A.02 and 1A.07 contain information regarding the application of standards.

## **Section 7A.06 Engineering Study Required**

### **SUPPORT:**

Section 1A.09 contains information regarding engineering studies.

## **Section 7A.07 Maintenance of Traffic Control Devices**

### **SUPPORT:**

Section 1A.05 contains information regarding the maintenance of traffic control devices.

## **Section 7A.08 Placement Authority**

### **SUPPORT:**

Section 1A.08 contains information regarding placement authority for traffic control devices.

## **Section 7A.09 Removal of Confusing, Distracting, or Obstructing Elements**

### **SUPPORT:**

Section 1A.08 contains information regarding the removal of confusing advertising.

### **STANDARD:**

**With the exception of required signing and striping, the controlling jurisdiction shall have the authority to immediately remove any signs, messages, or vegetation from within its right of way in or near a School Zone which it deems to be confusing, distracting, or obstructing to the function of that School Zone.**

## **Section 7A.10 Meaning of Standard, Guidance, Option, and Support**

### **SUPPORT:**

The INTRODUCTION to the MUTCD contains information regarding the meaning of the headings Standard, Guidance, Option, and Support, and the use of the words shall, should, and may.

## **Section 7A.11 Experimentation in School Zones**

### **STANDARD:**

In order to better coordinate experimentation in School Zones statewide, UDOT shall facilitate all proposals to the Federal Highway Administration to experiment in School Zones. Proposals for experimentation in School Zones shall be submitted to the UDOT Engineer for Traffic and Safety (see Appendix D for contact information).

The UDOT Engineer for Traffic and Safety shall make all submissions for experimentation in School Zones to the Federal Highway Administration, following the procedure described in Section 1A.10 of the MUTCD.

## **Section 7A.12 Private Schools, Charter Schools, Colleges, and Universities**

### **STANDARD:**

The requirements and specifications of this manual shall apply to charter schools using the same age group classifications that public elementary, middle, junior high, and high schools use. Private schools shall be required to meet the requirements and specifications of this manual when requesting any feature described herein to be installed on a public right-of-way using the same age group classifications that public elementary, middle, junior high, and high schools use.

Crosswalks associated with colleges and universities shall not be signed or marked as School Zones. Existing pedestrian facilities signed and/or marked as School Zones at colleges and universities shall be removed. Pedestrian facilities for college and universities shall be treated as described in the MUTCD.

### **OPTION:**

Added emphasis to warning signs associated with pedestrian crosswalks may be achieved using the fluorescent yellow background or by using larger sign sizes (see MUTCD, Table 2C-2).

## CHAPTER 7B. SIGNS

### Section 7B.01 Size of School Signs

#### **STANDARD:**

The sizes of the signs and plaques to be used on conventional roadways in School Zones shall be as shown in Table 7B-1.

The standard sign size shall be used on public roads, streets, and highways unless engineering judgement determines that a special sign size would be more appropriate.

The special sign size shall be used on expressways.

#### **OPTION:**

The special sign size may be used for applications that require increased emphasis, improved recognition, or increased legibility.

Table 7B-1. Size of School Zone Signs and Plaques			
Sign/Plaque	MUTCD Code	Conventional Roads	
		Standard	Special
SIGNS			
School Advance Warning	S1-1	36 x 36 in	48 x 48 in
SCHOOL BUS STOP AHEAD	S3-1	30 x 30 in	36 x 36 in
SCHOOL SPEED LIMIT 20 WHEN FLASHING	S5-1	24 x 48 in	36 x 72 in
END SCHOOL ZONE	S5-2	24 x 30 in	36 x 48 in
REDUCED SPEED AHEAD	R2-5a	24 x 30 in	36 x 48 in
School Buses Only (symbol)	SS1-2	12 x 24 in	-
SCHOOL BUSES ONLY	SS1-3	12 x 18 in	-
PLAQUES			
AHEAD	W16-9p	36 x 20 in	48 x 30 in
Diagonal Arrow	W16-7	36 x 18 in	48 x 30 in
ALL YEAR	SS1-1	36 x 18 in	48 x 30 in
NEXT X MILE(S)	W7-3a	36 x 24 in	48 x 30 in
SCHOOL	S4-3	36 x 12 in	48 x 16 in

## **Section 7B.02 Illumination and Reflectorization**

### **STANDARD:**

The signs used for School Zone traffic control shall be reflectorized or illuminated.

## **Section 7B.03 Position of Signs and Cones**

### **STANDARD:**

Position of signs shall be as prescribed in Appendix A, Sheets A1 through A10.

Portable school signs shall not be placed within the roadway at any time.

Cones shall be used at all locations when adult crossing guards are present. The cones shall be placed on the centerline of the roadway between opposing traffic lanes at each approach to the crosswalk (see Appendix A, Typical Applications, Sheet A5 through A8). Cones shall not be placed on lane lines separating traffic in the same direction, and shall not be placed in travel lanes. The cones shall have a minimum height of 28 inches and shall be orange in color. Auxiliary flags, signs, or lights shall not be used on the cones.

## **Section 7B.04 Height of Signs**

### **SUPPORT:**

Section 2A.18 contains information regarding the mounting height of signs.

## **Section 7B.05 Installation of Signs**

### **SUPPORT:**

Section 2A.21 contains information regarding the installation of signs.

## **Section 7B.06 Lettering**

### **SUPPORT:**

The “Standard Alphabets for Highway Signs and Pavement Markings” contains information regarding sign lettering.

## **Section 7B.07 Sign Color for School Warning Signs**

### **STANDARD:**

The following signs shall have a fluorescent yellow-green background with black legend and border:

- A. School Advance Warning sign (S1-1);
- B. SCHOOL BUS STOP AHEAD sign (S3-1);
- C. The SCHOOL portion of the School Speed Limit sign (S5-1);
- D. Diagonal Arrow plaque (W16-7);
- E. AHEAD plaque (W16-9p);
- F. ALL YEAR plaque (SS1-1);
- G. NEXT X MILE(S) plaque (W7-3a); and,
- H. SCHOOL plaque (S4-3).

The fluorescent yellow-green background shall not be used for any signs (in School Zones or otherwise) other than those listed above.

All new sign installations of the types above, including replacements, shall meet the color requirements in this Standard.

### **OPTION:**

Added emphasis to warning signs other than those listed above may be achieved using a fluorescent yellow background.

### **STANDARD:**

In On-Premise School Bus Loading Zones, the School Buses Only (symbol) (SS1-2) sign and the SCHOOL BUSES ONLY (SS1-3) sign shall have a white background with red legend and border. The bus symbol on the SS1-2 sign shall be black.

## **Section 7B.08 School Advance Warning Sign (S1-1)**

### **STANDARD:**

A School Advance Warning (S1-1) sign shall be installed in advance of all School Crosswalks (see Appendix A, Typical Applications, Sheets A1 through A4) and in advance of the School Speed Limit assembly in a Reduced Speed School Zone (see Appendix A, Typical Applications, Sheets A5 through A8).

A supplementary AHEAD (W16-9p) plaque of the same color, and border shall be installed below the School Advance Warning (S1-1) sign in advance of the school crosswalk (see Appendix A, Typical Applications, Sheets A1 through A8).

A supplementary ALL YEAR (SS1-1) plaque of the same width, color, and border shall be installed between the School Advance Warning (S1-1) sign and the AHEAD (W16-9p) plaque for year-round schools (See Appendix A, Typical Applications, Sheets A1 through A8). The standard size plaque shall use 5 inch series "C" lettering.

A School Advance Warning (S1-1) sign shall be used for Narrow School Routes.

A supplementary NEXT X MILE(S) (W7-3a) plaque (see Appendix A, Typical Applications, Sheet A9) of the same width, color, and border shall be installed below the School Advance Warning (S1-1) sign for Narrow School Routes. The standard size plaque shall use series "C" lettering, with the NEXT lettering 6 inches in height, and the X MILES lettering 5" in height (see Appendix A, Typical Applications, Sheet A9).

If used for an Abutting School Zone, the School Advance Warning (S1-1) sign shall be used and shall not be supplemented with the AHEAD (W16-9p) plaque. For year-round schools, the School Advance Warning (S1-1) sign in an Abutting School Zone shall be supplemented with the ALL YEAR (SS1-1) plaque (see Appendix A, Typical Applications, Sheet A10).

#### **Section 7B.09 School Crosswalk Warning Assembly (S1-1 with Diagonal Arrow)**

##### **STANDARD:**

The School Crosswalk Warning assembly shall consist of a School Advance Warning (S1-1) sign with a supplementary Diagonal Arrow (W16-7) plaque directly underneath. This sign assembly shall be installed at the marked crosswalk, or as close to it as possible. The School Crossing (S2-1) sign (1988 MUTCD) and the ALL YEAR (SS1-1) plaque shall not be used at the crosswalk. The School Crosswalk Warning assembly shall be used when replacing a School Crossing (S2-1) sign.

The School Crosswalk Warning assembly shall only be used at a School Crosswalk, or at the crosswalk in a Reduced Speed School Zone.

The School Crosswalk Warning assembly shall not be installed on approaches controlled by a STOP (R1-1) sign.

#### **Section 7B.10 SCHOOL BUS STOP AHEAD Sign (S3-1)**

##### **GUIDANCE:**

The SCHOOL BUS STOP AHEAD (S3-1) sign should be installed in advance of locations where a school bus, when stopped at the bus stop, is not visible for a distance of 500 ft in advance and where there is no opportunity to relocate the bus stop to provide 500 ft of visibility.

**OPTION:**

The SCHOOL BUS STOP AHEAD (S3-1) sign, may be installed in advance of school bus stops along high speed roadways with limited refuge area for waiting students.

**Section 7B.11 School Speed Limit Assembly (S5-1 with a Speed Limit Sign Beacon)**

**STANDARD:**

The School Speed Limit assembly (SCHOOL SPEED LIMIT 20 MPH WHEN FLASHING (S5-1) sign with a Speed Limit Sign Beacon) shall be used only in conjunction with Reduced Speed School Zones and shall be located as near as practical to the required distance from the school crosswalk (See Appendix A, Typical Applications, Sheets A5 through A8). The school speed limit displayed shall be 20 mph. The School Speed Limit assembly shall be in substantial conformance with the specifications of UDOT Standard Drawing SN 2 (post-mounted) or SN 3 (overhead) (see the UDOT website at [www.udot.utah.gov](http://www.udot.utah.gov)). The flashing lights on the Speed Limit Sign Beacon shall flash yellow alternately, left and right.

**OPTION:**

Incandescent bulbs and 8-inch lenses may be used for the post-mounted School Speed Limit Assembly (see UDOT Standard Drawing SN-2).

**STANDARD:**

The in-force periods of reduced speed in Reduced Speed School Zones shall be as short a duration as possible, with in-force periods only during pronounced usage. The in-force period shall be a time extending from not earlier than 45 minutes before school starts until 15 minutes after school begins, and a period extending from 15 minutes prior to the end of school, to not later than 45 minutes after school ends. These periods of operation shall apply to all daily school programs. The School Speed Limit Sign Beacon shall not flash continuously throughout the school day.

At installations requiring an adult crossing guard, the School Speed Limit Sign Beacon shall be operated manually and only while the crossing guard is present. Installations which do not require adult crossing guards shall be operated by an automatic timer with a programmable yearly cycle. At such installations, the local authority shall be responsible to program and operate the automatic timer.

The Specific Periods of Operations (S4-1) plaque and the WHEN CHILDREN ARE PRESENT (S4-2) plaque shall not be used.

## Section 7B.12 School Reduced Speed Ahead Assembly

### OPTION:

The School Reduced Speed Ahead assembly may be used to inform the road users of a Reduced Speed School Zone when engineering judgment indicates that advance notice would be appropriate.

### STANDARD:

If used, the School Reduced Speed Ahead assembly shall consist of the REDUCED SPEED AHEAD (R2-5a) sign in combination with the SCHOOL (S4-3) plaque mounted above it.

If used, The School Reduced Speed Ahead assembly shall be installed in advance of a Reduced Speed School Zone (See Appendix A, Typical Applications, Sheets A5 through A8). The spacing of the School Reduced Speed Ahead assembly from the School Advance Warning (S1-1) sign shall be as given in Table 7B-2.

Table 7B-2. School Reduced Speed Ahead Assembly Spacing	
Posted Speed Limit (mph)	Spacing to Advance Warning Assembly (ft) <sup>1</sup>
25	100
30	130
35	215
40	340
45	500
50	640
Note: 1. Distance may vary from 0.95 x Spacing to 1.2 x Spacing	

## Section 7B.13 END SCHOOL ZONE Sign (S5-2)

### STANDARD:

The end of a Reduced Speed School Zone shall be marked with an END SCHOOL ZONE (S5-2) sign. The END SCHOOL ZONE (S5-2) sign shall be located as near to 50 feet as practical on the far side of the school crosswalk or on the far side of the intersection in a Reduced Speed School Zone (see Appendix A, Typical Applications, Sheets A5 through A8).

## **Section 7B.14 Parking and Stopping Signs (R7 and R8 Series)**

### **STANDARD:**

Parking shall be restricted upon the side(s) of the highway designated as a Narrow School Route during school hours including loading and unloading periods.

Parking shall be restricted in the approach to school crosswalks in School Zones during school hours including loading and unloading periods. Parking shall also be restricted beyond the crosswalk (see Appendix A, Typical Applications, Sheets A1 through A8).

### **OPTION:**

Parking may be restricted along approaches to the School Advance Warning assembly, and the School Speed Limit assembly. Parking may also be restricted upon all streets immediately abutting the school grounds during school hours including loading and unloading periods.

### **SUPPORT:**

Refer to Sections 2B.34, 2B.35, and 2B.36 of the MUTCD for details of Parking and Stopping signing.

## **Section 7B.15 On-Premise School Bus Loading Zone Signs (SS1-2 and SS1-3)**

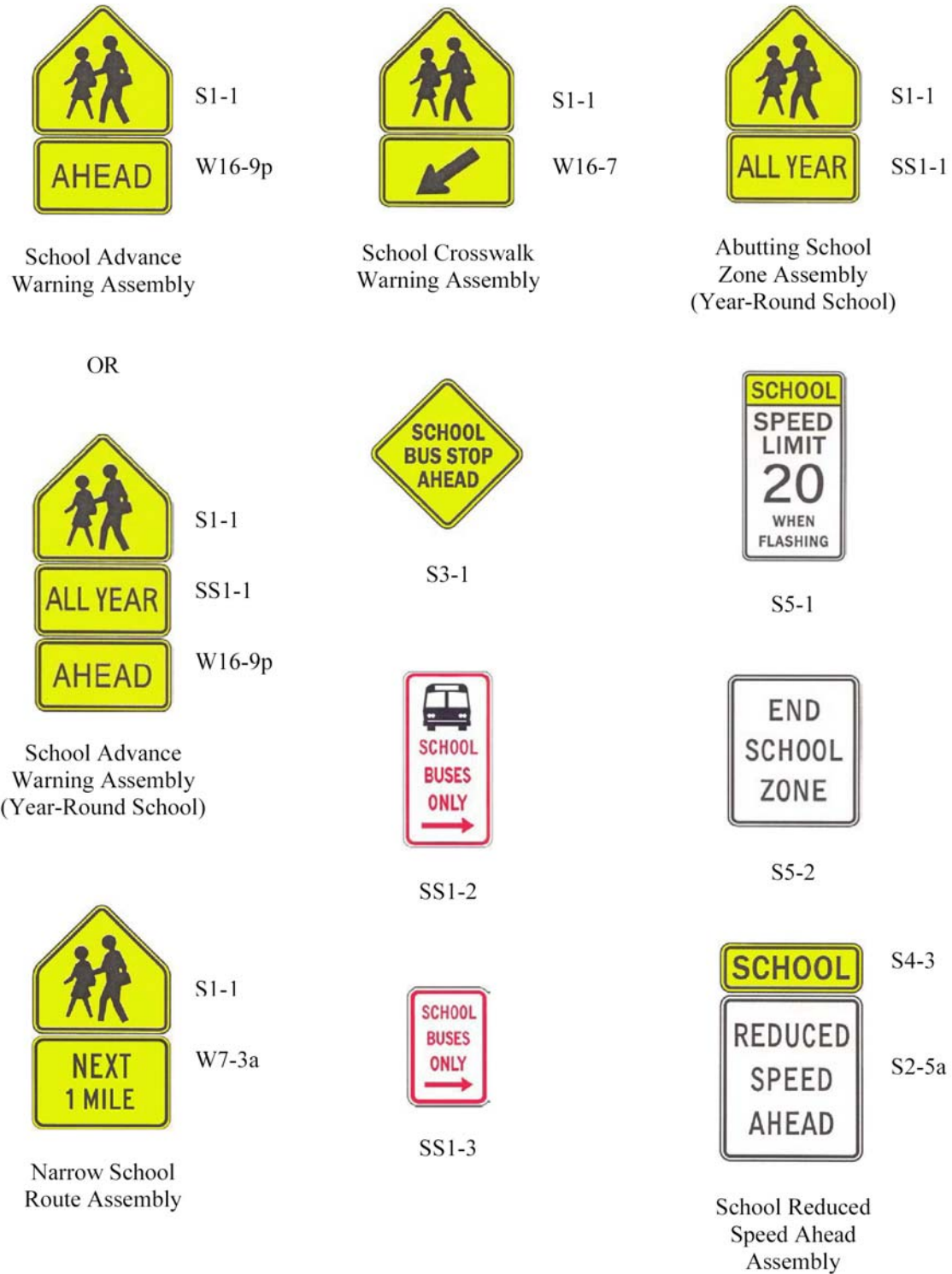
### **STANDARD:**

On-Premise School Bus Loading Zone signs, School Buses Only (symbol) (SS1-2) sign and SCHOOL BUSES ONLY (SS1-3) sign, shall be used to mark the beginning and the end of each On-Premise School Bus Loading Zone. Intermediate signs shall be installed at approximate 50-foot spacing within the Zone.

### **OPTION:**

Either the School Buses Only (symbol) (SS1-2) sign or the SCHOOL BUSES ONLY (SS1-3) sign may be used in an On-Premise School Bus Loading Zone.

**Figure 7B-1. School Zone Signs**



## CHAPTER 7C. MARKINGS

### Section 7C.01 Functions and Limitations

#### **SUPPORT:**

Markings have definite and important functions in a proper scheme of School Zone traffic control. In some cases, they are used to supplement the regulations or warnings provided by other devices, such as traffic signs or signals. In other instances, they are used alone and produce results that cannot be obtained by the use of any other device. In such cases they serve as an effective means of conveying certain regulations, guidance, and warnings that could not otherwise be made clearly understandable.

Pavement markings have limitations. They might be obliterated by snow, might not be clearly visible when wet, and might not be durable when subjected to heavy traffic. In spite of these limitations, they have the advantage, under favorable conditions, of conveying warnings or information to the road user without diverting attention from the road.

### Section 7C.02 Standardization of Application

#### **STANDARD:**

Each standard marking shall be used only to convey the meaning prescribed for it in the MUTCD.

### Section 7C.03 Crosswalk Markings

#### **STANDARD:**

Longitudinal crosswalk markings shall be reserved for School Crosswalks and Reduced Speed School Zones (see Standard Drawing ST 9 on the UDOT website at [www.udot.utah.gov](http://www.udot.utah.gov)). Crosswalk and Diagonal (special emphasis) line crosswalk markings shall not be used at School Crosswalks or in Reduced Speed School Zones.

### Section 7C.04 Stop and Yield Lines

#### **STANDARD:**

Stop lines shall consist of solid white lines extending across approach lanes to indicate the point at which the stop is intended or required to be made. Yield lines shall consist of a row of isosceles triangles pointing toward approaching vehicles extending across approach lanes to indicate the point at which the yield is intended or required to be made (see Standard

Drawing ST 9 on the UDOT website at [www.udot.utah.gov](http://www.udot.utah.gov)).

**GUIDANCE:**

Stop lines should be 24 in wide. Stop lines should be used to indicate the point behind which vehicles are required to stop, in compliance with a STOP (R1-1) sign or traffic signal. Stop lines at mid-block signalized locations should be placed at least 40 ft in advance of the nearest signal indication (see Section 4D.15).

Yield lines should be used to indicate the point behind which vehicles are required to yield, in compliance with a YIELD (R1-2) sign. The individual triangles comprising the yield line should have a minimum base width of 24 in and a height equal to 1.5 times the base width. The space between the triangles should be 6 in to 12 in.

Stop or yield lines, if used, should be placed 4 ft in advance of and parallel to the nearest crosswalk line, except at roundabouts as provided for in Section 3B.24.

**Section 7C.05 Curb markings for Parking Regulations**

**STANDARD:**

**Signs shall be used with curb markings in those areas where curb markings are frequently obliterated by snow and ice accumulation, unless the no parking zone is controlled by statute or local ordinance.**

**GUIDANCE:**

When curb markings are used without signs to convey parking regulations, a legible word marking regarding the regulation (such as “No Parking” or “No Standing”) should be placed on the curb.

**OPTION:**

Local authorities may prescribe special colors for curb markings to supplement standard signs for parking regulation.

**SUPPORT:**

Since yellow and white curb markings are frequently used for curb delineation and visibility, it is advisable to establish parking regulations through the installation of standard signs (see Section 2B.34 through 2B.36).

**STANDARD:**

**Curbs within On-Premise School Bus Loading Zones shall be painted fluorescent yellow-green.**

## **Section 7C.06 Pavement Word and Symbol Markings**

### **STANDARD:**

Word and symbol markings shall be white in color. Word and symbol markings shall not be used for mandatory messages except in support of standard signs.

### **GUIDANCE:**

Large letters and numerals should be 6-feet or more in height. Letters, numerals and symbols should be in accordance with the “Standard Alphabets for Highway Signs and Pavement Markings.”

The longitudinal space between word or symbol message markings, including arrow markings, should be at least four times the height of the characters for low speed roads, but not more than ten times the height of the characters under any conditions.

### **STANDARD:**

Except as noted in the Option below, pavement word and symbol markings shall be no more than one lane in width (see Standard Drawing ST 9 on the UDOT website at [www.udot.utah.gov](http://www.udot.utah.gov)).

### **OPTION:**

The SCHOOL word marking may extend to the width of two approach lanes.

### **STANDARD:**

If the two-lane SCHOOL marking is used, the letters shall be 10-feet or more in height (see Standard Drawing ST 9 on the UDOT website at [www.udot.utah.gov](http://www.udot.utah.gov)).

The two-lane SCHOOL marking shall only be used on highways with an even number of approach lanes. Highways with an odd number of approach lanes shall use a SCHOOL marking in each lane.

The pavement adjacent to the School Advance Warning assembly (S1-1 with supplementary plaques) shall be marked and maintained with the message “SCHOOL” across the traffic lane(s) (see Appendix A, Typical Applications, Sheets A1 through A8).

## **Section 7C.07 Center, Lane and Edge Lines**

### **STANDARD:**

**On paved roads, a School Crosswalk or Reduced Speed School Zone shall be marked as follows (see Appendix A, Typical Applications, Sheets A1 through A8):**

- A. With no two-way left-turn lane (TWLTL), the center line shall be a solid double yellow line between any two travel lanes moving in opposing directions for the entire length of a School Crosswalk or Reduced Speed School Zone (between the School Advance Warning signs in both cases);**
- B. With a TWLTL, striping shall be as per Part 3 of the MUTCD (also see Appendix A, Typical Applications, Sheets A4 and A6); and,**
- C. Lane line(s) shall be solid white between any two travel lanes moving in the same direction approaching the crosswalk. The length of the solid white lines shall be based on the posted speed limit (see Appendix A, Typical Applications, Sheets A1 through A8).**

### **GUIDANCE:**

On non-paved roads, the standard signing for a School Crosswalk or a Reduced Speed School Zone should be supplemented with the DO NOT PASS (R4-1) sign and the PASS WITH CARE (R4-2) sign.

### **OPTION:**

An 8-inch solid white edge line may be installed on the outside lane for the length of the Narrow School Route (see Appendix A, Typical Applications, Sheet A9).

## CHAPTER 7D. SIGNALS

### Section 7D.01 General

#### **SUPPORT:**

Part 4 of the MUTCD contains information regarding highway traffic signals in School Zones. The School Crossing signal warrant is described in Section 4C.06.

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## CHAPTER 7E. CROSSING SUPERVISION

### Section 7E.01 Types of Crossing Supervision

#### **SUPPORT:**

There are two types of school crossing supervision:

- A. Adult control of pedestrians and vehicles by adult guards or law enforcement officers; and,
- B. Student control of only pedestrians with student patrols.

Information for the organization, operation and administration of an adult crossing guard program are given in “Civilian Guards For School Crossings” (available from the Traffic Institute of Northwestern University, 405 Church Street, Evanston, IL 60204) and “Adult School Crossing Guards” (available from the American Automobile Association, 1000 AAA Drive, Heathrow, FL 32746).

Information for the organization, administration and operation of a student patrol program are given in “Policies and Practices for School Safety Patrols” (available from the American Automobile Association, 1000 AAA Drive, Heathrow, FL 32746).

### Section 7E.02 Adult Guards

#### **STANDARD:**

**Adult crossing guards shall be required at all Reduced Speed School Zones for elementary schools. Adult crossing guards shall also be required at School Crosswalks for elementary schools at signalized intersections where the posted speed limit is 30 mph or greater.**

#### **OPTION:**

Adult crossing guards may be used at School Crosswalks and Reduced Speed School Zones for middle, junior high, and high schools. Adult crossing guards may also be used at all other School Crosswalks for elementary schools.

#### **STANDARD:**

**Application of crossing guards and signing shall be in accordance with Appendix B1, “Requirements for School Crosswalks, Reduced Speed School Zones, and Crossing Guards.”**

**For elementary schools, if no adult crossing guard is provided for a Reduced Speed School Zone, then that Reduced Speed School Zone shall be removed, and the school child access routing plan shall be reviewed and changed by the School Community Council.**

### **Section 7E.03 Qualifications of Adult Guards**

#### **SUPPORT:**

High standards for selection of adult guards are essential.

#### **GUIDANCE:**

Adult guards should possess the following qualifications:

- A. Average intelligence;
- B. Good physical condition, including sight, hearing, and mobility;
- C. Mental alertness;
- D. Neat appearance;
- E. Good character;
- F. Dependability; and,
- G. Sense of responsibility for safety of students.

#### **OPTION:**

A background check may be conducted on potential adult guards by local law enforcement.

### **Section 7E.04 Uniform of Adult Guards and Student Patrols**

#### **STANDARD:**

The minimum safety apparel for crossing guards shall include an orange vest with reflective white, yellow, or orange striping.

### **Section 7E.05 Operating Procedures for Adult Guards**

#### **GUIDANCE:**

Adult Guards should not direct traffic in the usual law enforcement regulatory sense. In the control of traffic, they should pick opportune times to create a safe gap. At these times, they should stand in the roadway to indicate that pedestrians are about to use or are using the crosswalk, and that all vehicular traffic must stop.

#### **STANDARD:**

Adult guards shall daily instruct elementary school children in safe crossing techniques and in general pedestrian safety.

**Adult crossing guards shall use a STOP paddle. The STOP paddle shall be the primary hand-signaling device.**

**The STOP paddle shall be an octagonal shape. The background of the STOP paddle face shall be red with 6-inch capital white letters and border. The paddle shall be 18-inch in size and shall have the word message STOP on both sides. The paddle shall be reflectorized or illuminated when used during hours of darkness.**

**GUIDANCE:**

Adult crossing guards should not park their vehicle in a manner which limits the visibility of signs, markings, students, or other vehicles within a school zone.

**Section 7E.06 Law Enforcement Officers**

**OPTION:**

Law enforcement officers may be used for school crossing supervision.

**Section 7E.07 Student Patrols**

**STANDARD:**

**Student patrols shall not direct vehicular traffic. Student patrols shall not function as law enforcement officers or adult guards, or in the place of law enforcement officers or adult guards.**

**Section 7E.08 Choice of Student Patrols**

**GUIDANCE:**

Student patrols should be carefully selected. They should be students from the fifth grade or higher. Leadership and reliability should be determining qualities for patrol membership.

Parental approval should be obtained in writing before a student is used as a member of a student patrol.

## **Section 7E.09 Operating Procedures for Student Patrols**

### **GUIDANCE:**

Student patrols should use a flagging device to stop pedestrians behind the curb or edge of the roadway, and should allow them to cross only when there is an adequate gap in traffic.

### **STANDARD:**

Flagging devices used during periods of twilight or darkness shall be retroreflective or illuminated.

Because they are not authorized to direct vehicular traffic, student patrols shall not use a STOP paddle.

## **Section 7E.10 Training for Adult Crossing Guards**

### **STANDARD:**

Adult crossing guards shall be trained, as a minimum, in the following:

- A. Qualifications for adult crossing guards;
- B. Uniform and equipment;
- C. Operation procedures;
- D. Traffic rules and regulations; and,
- E. Emergency procedures, including first aid and CPR.

Adult crossing guards shall attend a refresher course every year.

## **Section 7E.11 Legal authority for Adult Guards**

### **STANDARD:**

Adult crossing guards shall be provided and regulated by the local jurisdiction for public and charter schools. The local jurisdiction shall also train the adult crossing guards in the use of correct apparel, operation procedures, pedestrian safety, and proper use of pedestrian crossing facilities.

For private schools, required crossing guards shall be provided and regulated by the local jurisdiction only if a funding agreement is established between the private school and the local jurisdiction. If no funding agreement can be reached, no crossing guard shall be provided. In instances where a crossing guard is required as established by a child access routing plan, and no funding agreement is reached, the associated School Crossing and/or Reduced Speed School Zone shall be removed and the child access routing plan revised.

# **APPENDICES**

## **Appendix A – Typical Applications**

**Sheet A1:** Typical Intersection School Crosswalk - Four-Way Stop-Controlled

**Sheet A2:** Typical Intersection School Crosswalk - Signal-Controlled

**Sheet A3:** Typical Intersection School Crosswalk - Two-Way Stop-Controlled

**Sheet A4:** Typical Midblock School Crosswalk

**Sheet A5:** Typical Intersection Reduced Speed School Zone - Two-Way Stop-Controlled

**Sheet A6:** Typical Midblock Reduced Speed School Zone

**Sheet A7:** Typical Intersection Reduced Speed School Zone - Four-Way Stop-Controlled

**Sheet A8:** Typical Intersection Reduced Speed School Zone - Signal Controlled

**Sheet A9:** Typical Narrow School Route

**Sheet A10:** Typical Abutting School Zone

## **Appendix B - School Zone Protection Flowcharts**

**Appendix B1:** Requirements for School Crosswalks, Reduced Speed School Zones, and Crossing Guards

**Appendix B2:** Requirements for an Overhead School Speed Limit Assembly (OSSLA) in a Reduced Speed School Zone

## **Appendix C – Warrant: Reduced Speed School Zone**

## **Appendix D – Utah Department of Transportation Contact Information and Region Map**



# **APPENDIX A**

## **Typical Applications**

## SIGNING AND STRIPING PLACEMENT

SHEET A1

TYPICAL INTERSECTION SCHOOL CROSSWALK -  
FOUR-WAY STOP-CONTROLLED

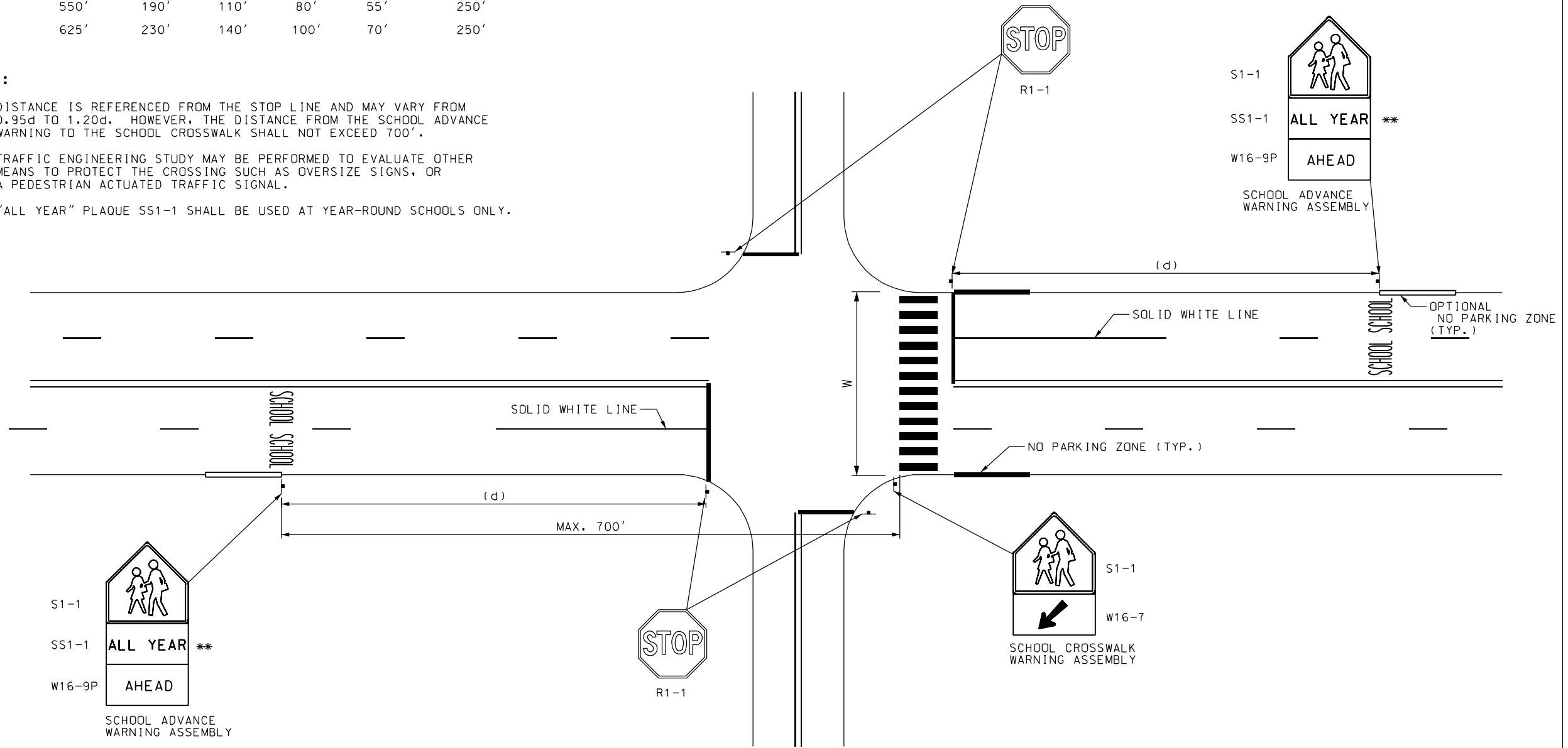
POSTED SPEED LIMIT (MPH)	SCHOOL ADVANCE (S1-1) (d)	NO PARKING ZONE LENGTH AFTER X WALK				MINIMUM SOLID WHITE LINE LENGTH
		AT X WALK OR SCHOOL ADVANCE				
			W ≤ 50'	50' < W ≤ 70'	W > 70'	
25	250'	60'	40'	25'	20'	150'
30	325'	85'	50'	35'	25'	150'
35	400'	115'	70'	50'	35'	200'
40	475'	150'	90'	65'	45'	250'
* 45	550'	190'	110'	80'	55'	250'
* 50	625'	230'	140'	100'	70'	250'

NOTES:

(d) DISTANCE IS REFERENCED FROM THE STOP LINE AND MAY VARY FROM 0.95d TO 1.20d. HOWEVER, THE DISTANCE FROM THE SCHOOL ADVANCE WARNING TO THE SCHOOL CROSSWALK SHALL NOT EXCEED 700'.

\* TRAFFIC ENGINEERING STUDY MAY BE PERFORMED TO EVALUATE OTHER MEANS TO PROTECT THE CROSSING SUCH AS OVERSIZE SIGNS, OR A PEDESTRIAN ACTUATED TRAFFIC SIGNAL.

\*\*\* "ALL YEAR" PLAQUE SS1-1 SHALL BE USED AT YEAR-ROUND SCHOOLS ONLY.

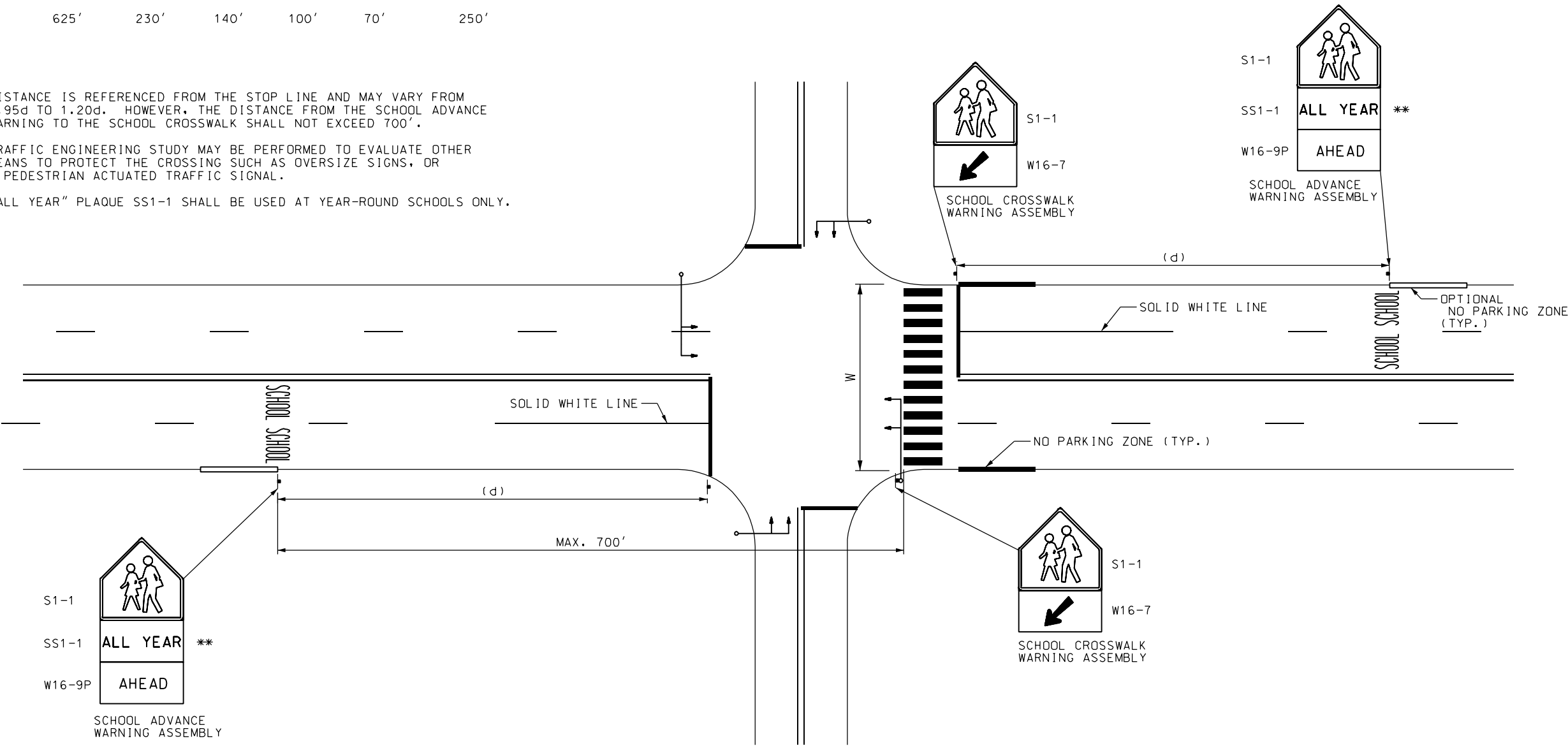
[illegible]

SIGNING AND STRIPING PLACEMENT

POSTED SPEED LIMIT (MPH)	SCHOOL ADVANCE (S1-1) (d)	NO PARKING ZONE LENGTH		MINIMUM SOLID WHITE LINE LENGTH	
		AT X WALK OR SCHOOL ADVANCE	AFTER X WALK	W ≤ 50'	50' < W ≤ 70' W > 70'
25	250'	60'	40'	25'	20'
30	325'	85'	50'	35'	25'
35	400'	115'	70'	50'	35'
40	475'	150'	90'	65'	45'
* 45	550'	190'	110'	80'	55'
* 50	625'	230'	140'	100'	70'

NOTES:

- (d) DISTANCE IS REFERENCED FROM THE STOP LINE AND MAY VARY FROM 0.95d TO 1.20d. HOWEVER, THE DISTANCE FROM THE SCHOOL ADVANCE WARNING TO THE SCHOOL CROSSWALK SHALL NOT EXCEED 700'.
- \* TRAFFIC ENGINEERING STUDY MAY BE PERFORMED TO EVALUATE OTHER MEANS TO PROTECT THE CROSSING SUCH AS OVERSIZE SIGNS, OR A PEDESTRIAN ACTUATED TRAFFIC SIGNAL.
- \*\* "ALL YEAR" PLAQUE SS1-1 SHALL BE USED AT YEAR-ROUND SCHOOLS ONLY.



SHEET A2

TYPICAL INTERSECTION SCHOOL CROSSWALK -  
SIGNAL-CONTROLLED

UTAH DEPARTMENT OF TRANSPORTATION		SALT LAKE CITY, UTAH		DIVISION OF TRAFFIC AND SAFETY, DESIGN		REVIEW		DATE		BY		REMARKS	
TYPICAL INTERSECTION		SCHOOL CROSSWALK		SIGNAL-CONTROLLED		DESIGN		CHECK		DATE		PARCELS REQUEST	
PROJECT NUMBER		APPENDIX A		QUANT.		RCC		CHECK		DATE		ORIGINAL SUBMISSION FOR AUTHORIZATION	
APPROVAL RECORD		DATE		PROJECT DESIGN ENGINEER		APPROVED		DATE		PRECONSTRUCTION ENGINEER		REVISIONS	
COUNTY		SHEET NO.		A2									

SIGNING AND STRIPING PLACEMENT

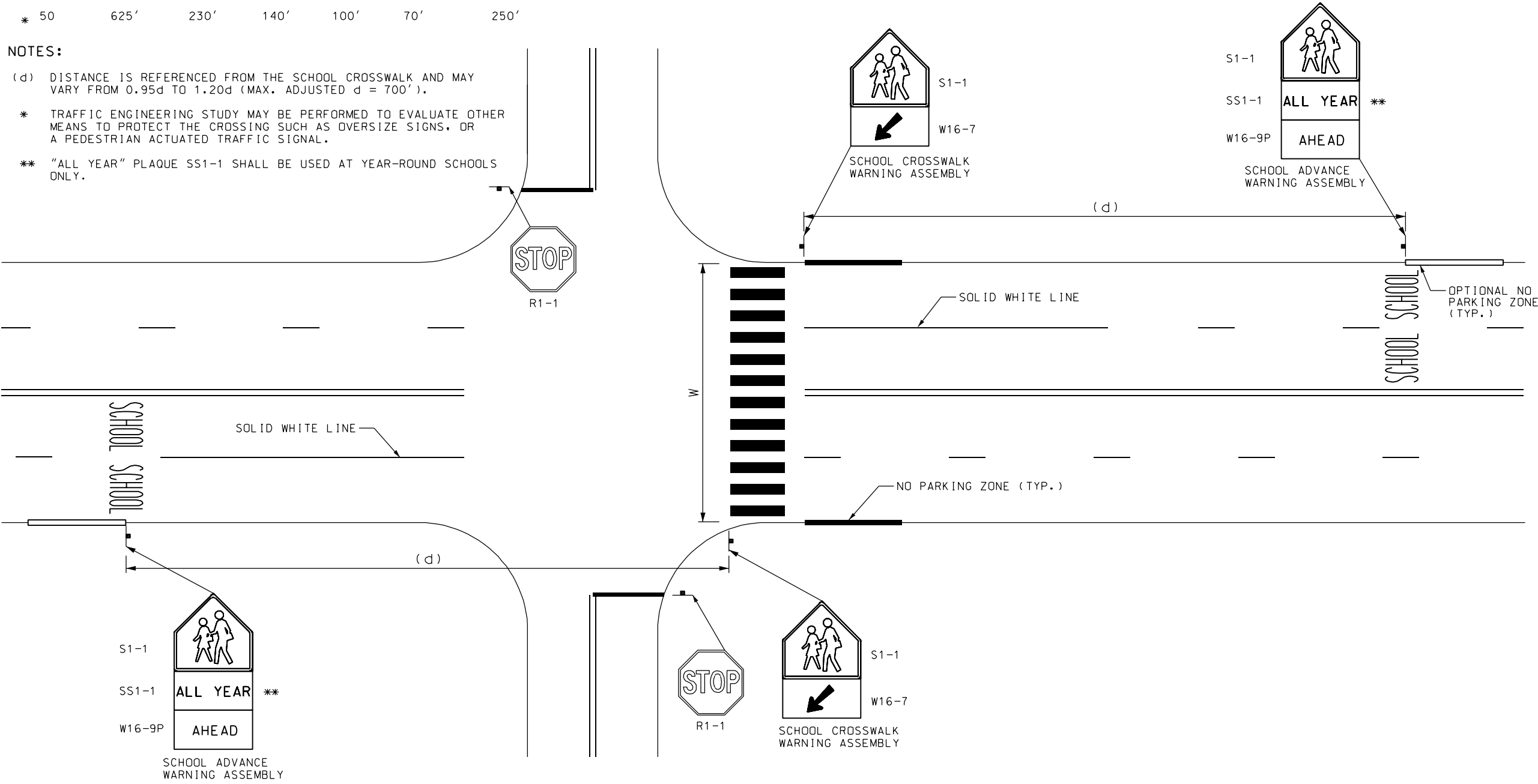
SHEET A3

TYPICAL INTERSECTION SCHOOL CROSSWALK – TWO-WAY STOP-CONTROLLED

POSTED SPEED LIMIT (MPH)	SCHOOL ADVANCE (S1-1) (d)	NO PARKING ZONE LENGTH		MINIMUM SOLID WHITE LINE LENGTH	
		AT X WALK OR SCHOOL ADVANCE	AFTER X WALK	W ≤ 50'	50' < W ≤ 70' W > 70'
25	250'	60'	40'	25'	20'
30	325'	85'	50'	35'	25'
35	400'	115'	70'	50'	35'
40	475'	150'	90'	65'	45'
* 45	550'	190'	110'	80'	55'
* 50	625'	230'	140'	100'	70'

NOTES:

- (d) DISTANCE IS REFERENCED FROM THE SCHOOL CROSSWALK AND MAY VARY FROM 0.95d TO 1.20d (MAX. ADJUSTED d = 700').
- \* TRAFFIC ENGINEERING STUDY MAY BE PERFORMED TO EVALUATE OTHER MEANS TO PROTECT THE CROSSING SUCH AS OVERSIZE SIGNS, OR A PEDESTRIAN ACTUATED TRAFFIC SIGNAL.
- \*\* "ALL YEAR" PLAQUE SS1-1 SHALL BE USED AT YEAR-ROUND SCHOOLS ONLY.



TYPICAL INTERSECTION		SCHOOL CROSSWALK		TWO-WAY STOP-CONTROLLED		APPENDIX A	
COUNTY		PROJECT NUMBER		DATE		DATE	
SHEET NO. A3		PROJECT DESIGN ENGINEER		PROJECT DESIGN ENGINEER		PROJECT DESIGN ENGINEER	
SALT LAKE CITY, UTAH		DIVISION OF TRAFFIC AND SAFETY, DESIGN		CHECK		CHECK	
UTAH DEPARTMENT OF TRANSPORTATION		DESIGN		CHECK		CHECK	
SALT LAKE CITY, UTAH		DRAWN		CHECK		CHECK	
DIVISION OF TRAFFIC AND SAFETY, DESIGN		RCC		CHECK		CHECK	
DESIGN		RCC		CHECK		CHECK	
DATE		DATE		DATE		DATE	
APPROVAL		APPROVAL		APPROVAL		APPROVAL	
REVISION		REVISION		REVISION		REVISION	
DESIGN		DESIGN		DESIGN		DESIGN	
REV. BY		REV. BY		REV. BY		REV. BY	
CORR. BY		CORR. BY		CORR. BY		CORR. BY	
MAPS		MAPS		MAPS		MAPS	
PARCELS		PARCELS		PARCELS		PARCELS	
REQUEST		REQUEST		REQUEST		REQUEST	
BY		BY		BY		BY	
ORIGINAL		ORIGINAL		ORIGINAL		ORIGINAL	
SUBMISSION		SUBMISSION		SUBMISSION		SUBMISSION	
FOR		FOR		FOR		FOR	
AUTHORIZATION		AUTHORIZATION		AUTHORIZATION		AUTHORIZATION	
REVISIONS		REVISIONS		REVISIONS		REVISIONS	

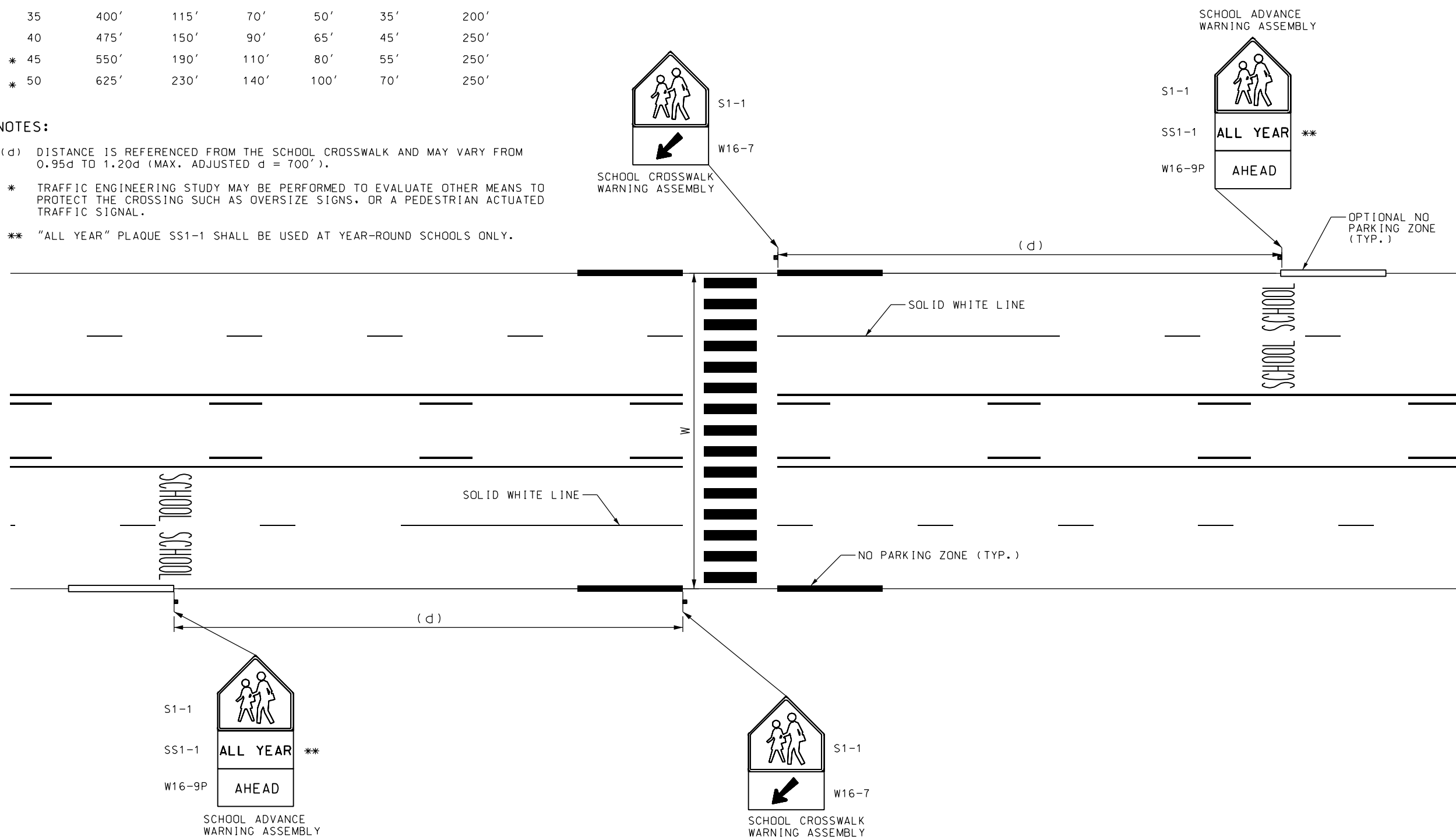
SHEET A4  
TYPICAL MIDBLOCK SCHOOL CROSSWALK

POSTED SPEED LIMIT (MPH)	SCHOOL ADVANCE (S1-1) (d)	NO PARKING ZONE LENGTH				MINIMUM SOLID WHITE LINE LENGTH
		AT X WALK OR SCHOOL ADVANCE	AFTER X WALK			
			W ≤ 50'	50' < W ≤ 70'	W > 70'	
25	250'	60'	40'	25'	20'	150'
30	325'	85'	50'	35'	25'	150'
35	400'	115'	70'	50'	35'	200'
40	475'	150'	90'	65'	45'	250'
* 45	550'	190'	110'	80'	55'	250'
* 50	625'	230'	140'	100'	70'	250'

(d) DISTANCE IS REFERENCED FROM THE SCHOOL CROSSWALK AND MAY VARY FROM 0.95d TO 1.20d (MAX. ADJUSTED d = 700').

\* TRAFFIC ENGINEERING STUDY MAY BE PERFORMED TO EVALUATE OTHER MEANS TO PROTECT THE CROSSING SUCH AS OVERSIZE SIGNS, OR A PEDESTRIAN ACTUATED TRAFFIC SIGNAL.

\*\* "ALL YEAR" PLAQUE SS1-1 SHALL BE USED AT YEAR-ROUND SCHOOLS ONLY.



SIGNING AND STRIPING PLACEMENT

POSTED SPEED LIMIT (MPH)	SCHOOL SPEED LIMIT (S5-1) (d1)	SCHOOL ADVANCE (S1-1) (d2)	REDUCED SPEED AHEAD (S2-5a) (d3)	NO PARKING ZONE LENGTH			MINIMUM SOLID WHITE LINE LENGTH
				AT X WALK, SCHOOL ADVANCE, OR S5-1	AFTER X WALK	W ≤ 50' 50' < W ≤ 70' W > 70'	
25	150'	100'	100'	60'	40'	25'	150'
30	150'	100'	130'	85'	50'	35'	150'
35	200'	175'	215'	115'	70'	50'	200'
40	250'	250'	340'	150'	90'	65'	250'
* 45	250'	300'	500'	190'	110'	80'	250'
* 50	250'	400'	640'	230'	140'	100'	250'

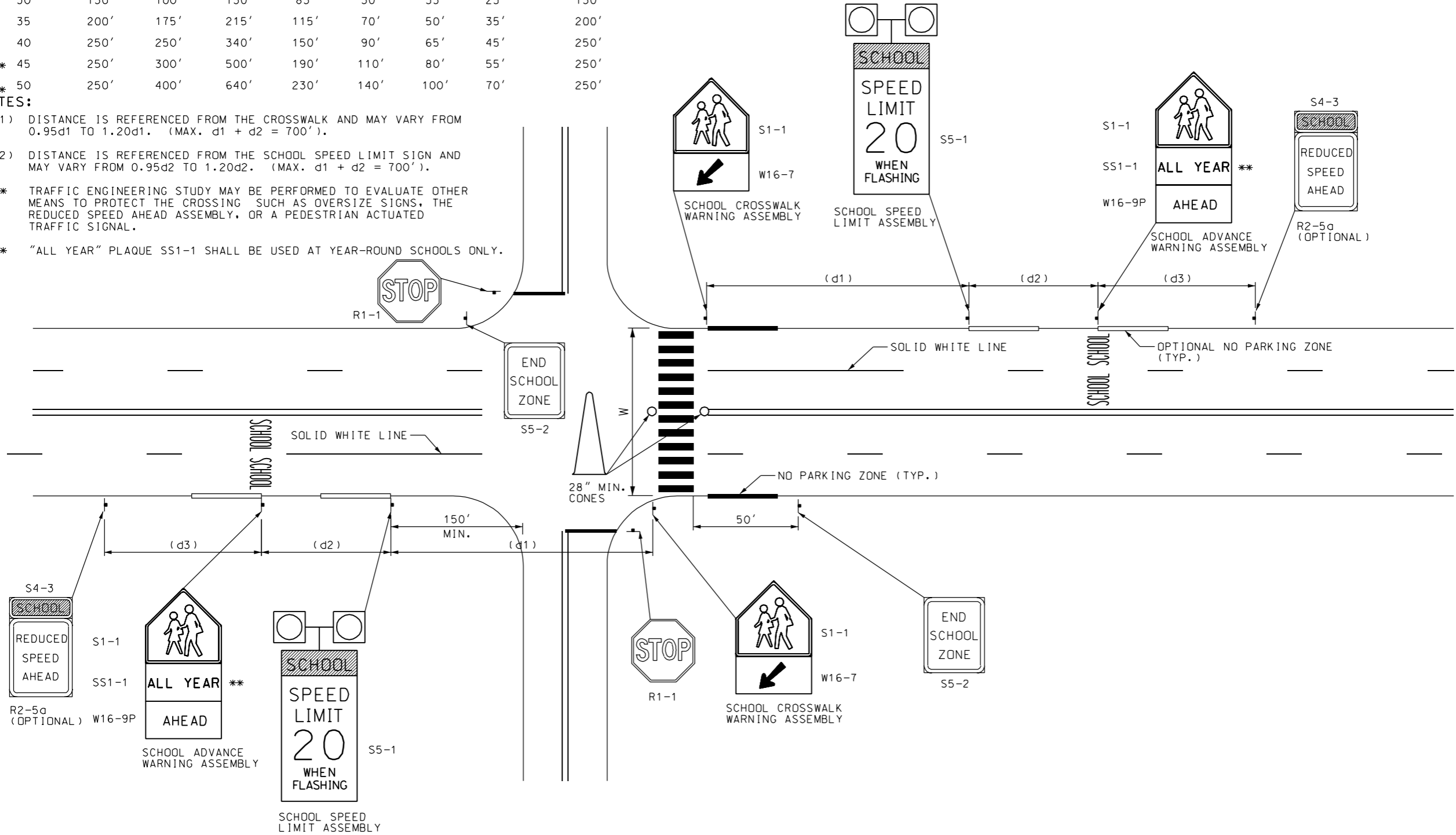
NOTES:

(d1) DISTANCE IS REFERENCED FROM THE CROSSWALK AND MAY VARY FROM 0.95d1 TO 1.20d1. (MAX. d1 + d2 = 700').

(d2) DISTANCE IS REFERENCED FROM THE SCHOOL SPEED LIMIT SIGN AND MAY VARY FROM 0.95d2 TO 1.20d2. (MAX. d1 + d2 = 700').

\* TRAFFIC ENGINEERING STUDY MAY BE PERFORMED TO EVALUATE OTHER MEANS TO PROTECT THE CROSSING SUCH AS OVERSIZE SIGNS, THE REDUCED SPEED AHEAD ASSEMBLY, OR A PEDESTRIAN ACTUATED TRAFFIC SIGNAL.

\*\* "ALL YEAR" PLAQUE SS1-1 SHALL BE USED AT YEAR-ROUND SCHOOLS ONLY.



SHEET A5

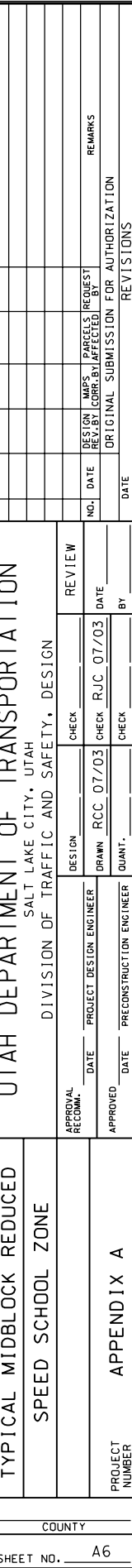
TYPICAL INTERSECTION REDUCED SPEED SCHOOL ZONE - TWO-WAY STOP-CONTROLLED

UTAH DEPARTMENT OF TRANSPORTATION		SALT LAKE CITY, UTAH		DIVISION OF TRAFFIC AND SAFETY, DESIGN		REVIEW		DATE		BY		REMARKS	
TYPICAL INTERSECTION		REDUCED SPEED SCHOOL ZONE		TWO-WAY STOP-CONTROLLED		PROJECT NUMBER		APPENDIX A		DESIGN		CHECK	
DATE		PROJECT DESIGN ENGINEER		DATE		PRECONSTRUCTION ENGINEER		DATE		CHECK		DATE	
APPROVAL RECORD		APPROVED		APPROVED		APPROVED		APPROVED		APPROVED		APPROVED	
COUNTY		A5		SHEET NO.		A5		SHEET NO.		A5		SHEET NO.	

SHEET A6

POSTED SPEED LIMIT (MPH)	SCHOOL SPEED LIMIT (S5-1) (d1)	SCHOOL ADVANCE (S1-1) (d2)	NO PARKING ZONE LENGTH			MINIMUM SOLID WHITE LINE LENGTH	
			AT X WALK, SCHOOL ADVANCE, OR S5-1	W ≤ 50'	50' < W ≤ 70'		W > 70'
25	150'	100'	60'	40'	25'	20'	150'
30	150'	100'	85'	50'	35'	25'	150'
35	200'	175'	115'	70'	50'	35'	200'
40	250'	250'	150'	90'	65'	45'	250'
* 45	250'	300'	190'	110'	80'	55'	250'
* 50	250'	400'	230'	140'	100'	70'	250'

\*\* "ALL YEAR" PLAQUE SS1-1 SHALL BE USED AT YEAR-ROUND SCHOOLS ONLY.



## SIGNING AND STRIPING PLACEMENT

POSTED SPEED LIMIT (MPH)	SCHOOL SPEED LIMIT (S5-1) (d1)	SCHOOL ADVANCE (S1-1) (d2)	NO PARKING ZONE LENGTH			MINIMUM SOLID WHITE LINE LENGTH	
			AT X WALK, SCHOOL ADVANCE, OR S5-1	AFTER X WALK			
				W ≤ 50'	50' < W ≤ 70'		W > 70'
25	150'	100'	60'	40'	25'	20'	150'
30	150'	100'	85'	50'	35'	25'	150'
35	200'	175'	115'	70'	50'	35'	200'
40	250'	250'	150'	90'	65'	45'	250'
* 45	250'	300'	190'	110'	80'	55'	250'
* 50	250'	400'	230'	140'	100'	70'	250'

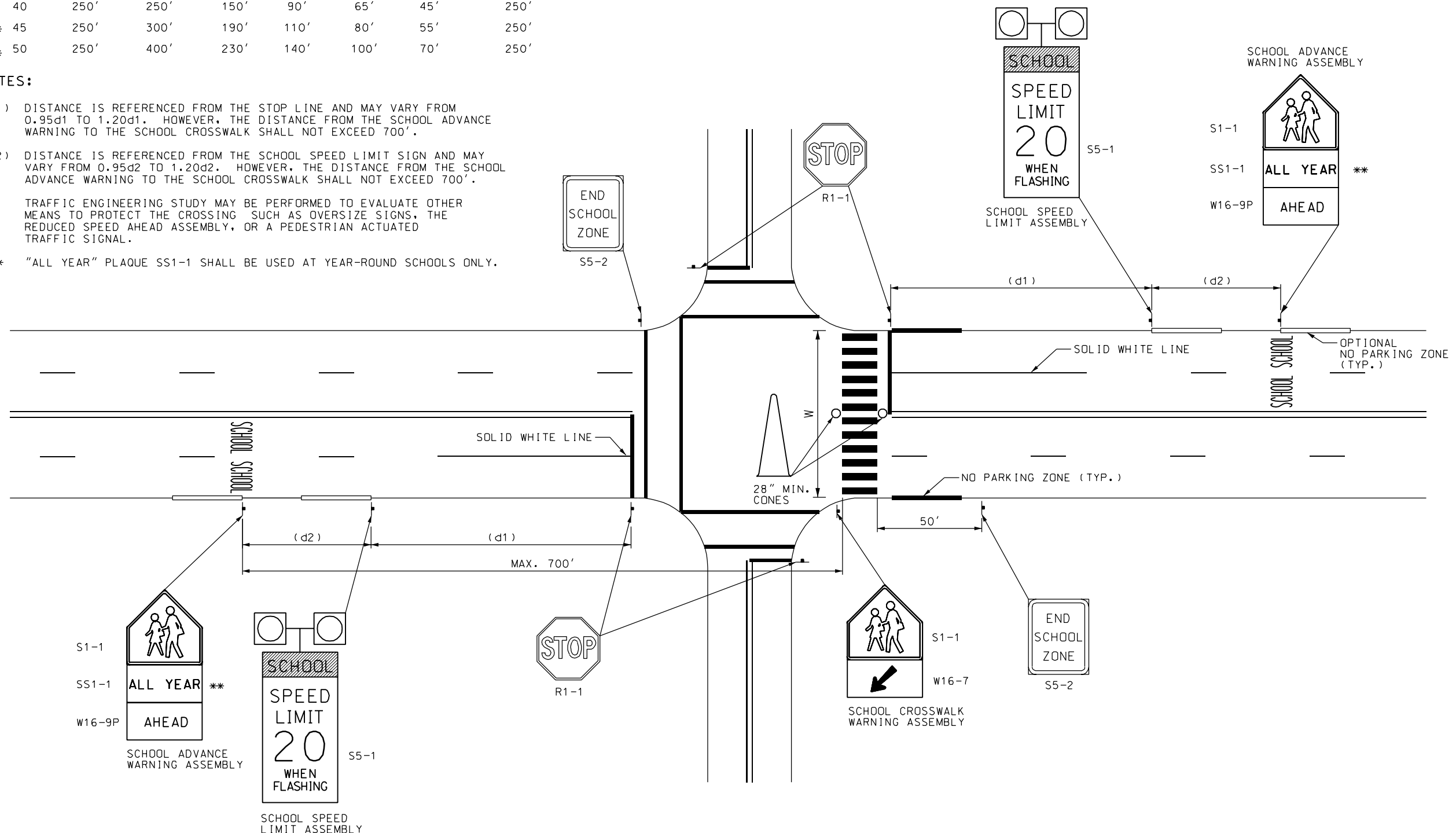
NOTES:

(d1) DISTANCE IS REFERENCED FROM THE STOP LINE AND MAY VARY FROM 0.95d1 TO 1.20d1. HOWEVER, THE DISTANCE FROM THE SCHOOL ADVANCE WARNING TO THE SCHOOL CROSSWALK SHALL NOT EXCEED 700'.

(d2) DISTANCE IS REFERENCED FROM THE SCHOOL SPEED LIMIT SIGN AND MAY VARY FROM 0.95d2 TO 1.20d2. HOWEVER, THE DISTANCE FROM THE SCHOOL ADVANCE WARNING TO THE SCHOOL CROSSWALK SHALL NOT EXCEED 700'.

\* TRAFFIC ENGINEERING STUDY MAY BE PERFORMED TO EVALUATE OTHER MEANS TO PROTECT THE CROSSING SUCH AS OVERSIZE SIGNS, THE REDUCED SPEED AHEAD ASSEMBLY, OR A PEDESTRIAN ACTUATED TRAFFIC SIGNAL.

\*\*\* "ALL YEAR" PLAQUE SS1-1 SHALL BE USED AT YEAR-ROUND SCHOOLS ONLY.



## SHEET A7

TYPICAL INTERSECTION REDUCED SPEED SCHOOL ZONE -  
FOUR-WAY STOP-CONTROLLED (FWSC)

(SEE SECTION 7A.03 FOR SPECIAL CONDITIONS FOR USE WITH FWSC)

[illegible]

## SIGNING AND STRIPING PLACEMENT

POSTED SPEED LIMIT (MPH)	SCHOOL SPEED LIMIT (S5-1) (d1) ***	SCHOOL ADVANCE (S1-1) (d2)	REDUCED SPEED AHEAD (S2-5a) (d3)	NO PARKING ZONE LENGTH			MINIMUM SOLID WHITE LINE LENGTH	
				AT X WALK, SCHOOL ADVANCED, OR S5-1	W ≤ 50'	50' < W ≤ 70'		W > 70'
25	150'	100'	100'	60'	40'	25'	20'	150'
30	150'	100'	130'	85'	50'	35'	25'	150'
35	200'	175'	215'	115'	70'	50'	35'	200'
40	250'	250'	340'	150'	90'	65'	45'	250'
* 45	250'	300'	500'	190'	110'	80'	55'	250'
* 50	250'	400'	640'	230'	140'	100'	70'	250'

NOTES:

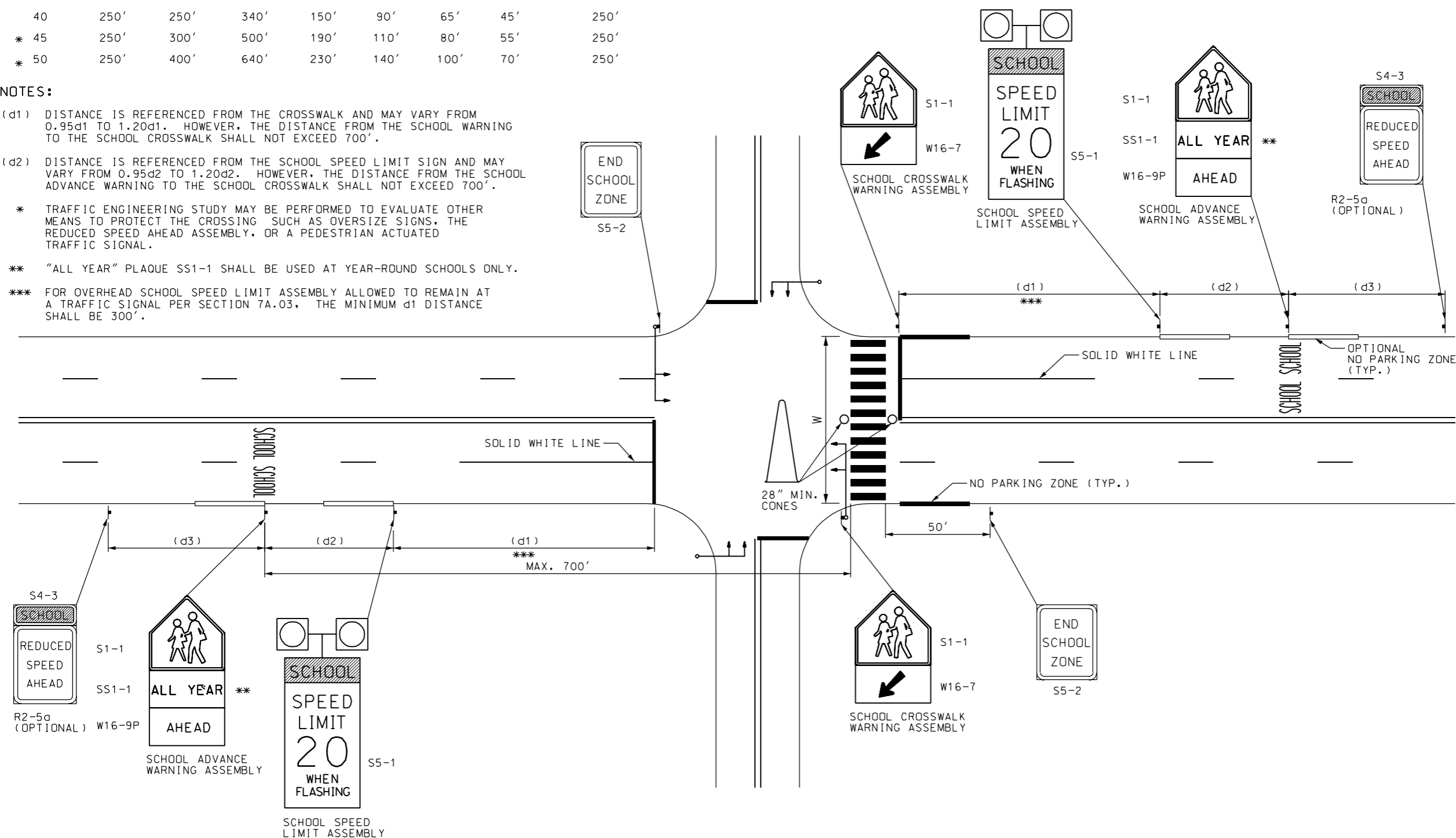
(d1) DISTANCE IS REFERENCED FROM THE CROSSWALK AND MAY VARY FROM 0.95d1 TO 1.20d1. HOWEVER, THE DISTANCE FROM THE SCHOOL WARNING TO THE SCHOOL CROSSWALK SHALL NOT EXCEED 700'.

(d2) DISTANCE IS REFERENCED FROM THE SCHOOL SPEED LIMIT SIGN AND MAY VARY FROM 0.95d2 TO 1.20d2. HOWEVER, THE DISTANCE FROM THE SCHOOL ADVANCE WARNING TO THE SCHOOL CROSSWALK SHALL NOT EXCEED 700'.

\* TRAFFIC ENGINEERING STUDY MAY BE PERFORMED TO EVALUATE OTHER MEANS TO PROTECT THE CROSSING SUCH AS OVERSIZE SIGNS, THE REDUCED SPEED AHEAD ASSEMBLY, OR A PEDESTRIAN ACTUATED TRAFFIC SIGNAL.

\*\*\* "ALL YEAR" PLAQUE SS1-1 SHALL BE USED AT YEAR-ROUND SCHOOLS ONLY.

\*\*\* FOR OVERHEAD SCHOOL SPEED LIMIT ASSEMBLY ALLOWED TO REMAIN AT A TRAFFIC SIGNAL PER SECTION 7A.03, THE MINIMUM d1 DISTANCE SHALL BE 300'.



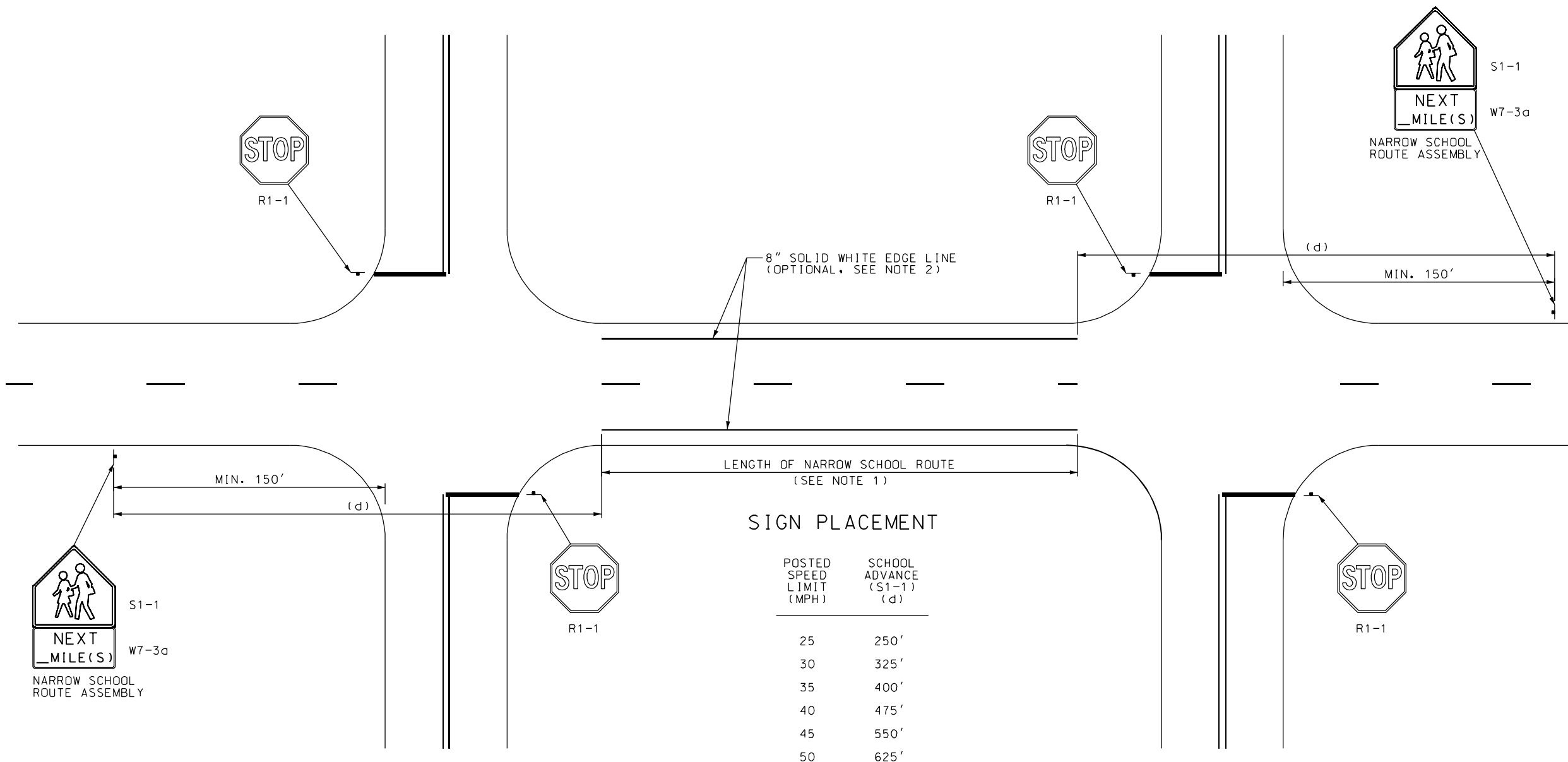
SHEET A8

TYPICAL INTERSECTION REDUCED SPEED SCHOOL ZONE -  
SIGNAL-CONTROLLED

(SEE SECTION 7A.03 FOR SPECIAL CONDITIONS FOR USE AT SIGNALS)

[illegible]

SHEET A9  
TYPICAL NARROW SCHOOL ROUTE



SIGN PLACEMENT

POSTED SPEED LIMIT (MPH)	SCHOOL ADVANCE (S1-1) (d)
25	250'
30	325'
35	400'
40	475'
45	550'
50	625'

- NOTES:
- (d) DISTANCE IS REFERENCED FROM THE BEGINNING OF THE NARROW SCHOOL ROUTE AND MAY VARY FROM 0.95d TO 1.20d.
  - (1) THE NARROW SCHOOL ROUTE SHALL NOT BE LONGER THAN 1 MILE IN URBAN AREAS AND 2 MILES IN RURAL AREAS.
  - (2) ONLY THE SIDE(S) WHICH HAVE SCHOOL CHILDREN WALKING IN A SAFE ROUTING PLAN MAY BE SIGNED AND HAVE THE 8 INCH SOLID WHITE STRIPE.
  - (3) SIGNS SHALL BE SPACED NO CLOSER TOGETHER THAN 1/4 MILE ALONG THE ROUTE IN URBAN AREAS AND 1/2 MILE IN RURAL AREAS.

UTAH DEPARTMENT OF TRANSPORTATION		SALT LAKE CITY, UTAH		DIVISION OF TRAFFIC AND SAFETY, DESIGN		REVIEW		DATE		BY	
TYPICAL NARROW SCHOOL ROUTE		PROJECT DESIGN ENGINEER		CHECK		RCC 07/03		CHECK		RJC 07/03	
PROJECT NUMBER		PRECONSTRUCTION ENGINEER		CHECK		QUANT.		CHECK		DATE	
COUNTY		APPROVED		DATE		APPROVED		DATE		APPROVED	
SHEET NO. A9		APPENDIX A		REMARKS		DESIGN REQUEST		MAPS CORRECTED BY		ORIGINAL SUBMISSION FOR AUTHORIZATION	
REVISIONS		NO.		DATE		DATE		DATE		DATE	

## SIGNING AND STRIPING PLACEMENT

POSTED SPEED LIMIT (MPH)	SCHOOL ADVANCE (S1-1) (d)	NO PARKING ZONE LENGTH  AT SCHOOL ADVANCE
15	150	150
20	200	200
25	250	250
30	300	300
35	350	350
40	400	400
45	450	450
50	500	500
55	550	550
60	600	600
65	650	650
70	700	700
75	750	750
80	800	800
85	850	850
90	900	900
95	950	950
100	1000	1000

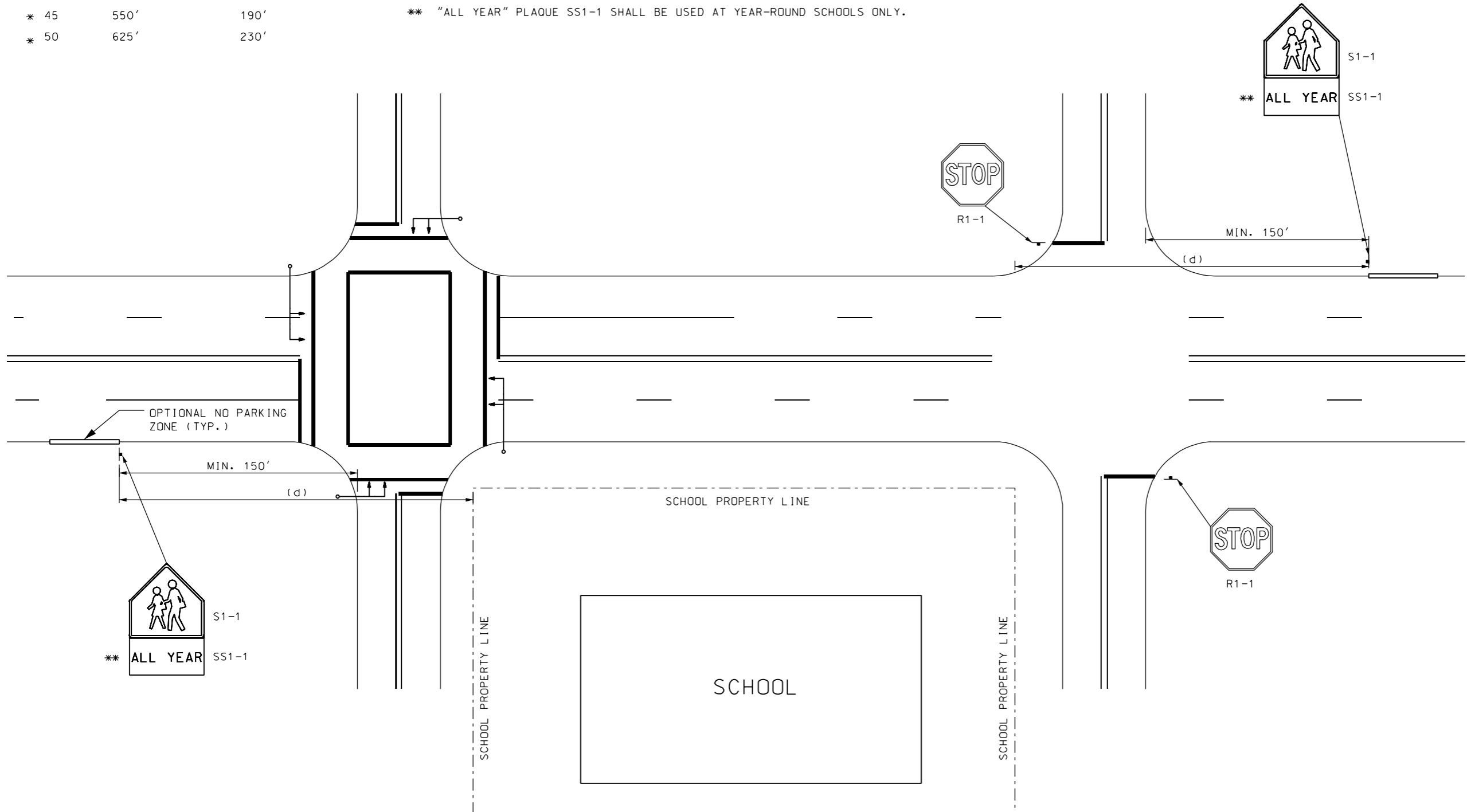
NOTES:

(d) DISTANCE IS REFERENCED FROM THE SCHOOL PROPERTY LINE AND MAY VARY FROM 0.95d TO 1.20d (MAX. ADJUSTED d = 700').

\* TRAFFIC ENGINEERING STUDY MAY BE PERFORMED TO EVALUATE OTHER MEANS TO PROTECT THE CROSSING SUCH AS OVERSIZE SIGNS, OR A PEDESTRIAN ACTUATED TRAFFIC SIGNAL.

\*\* "ALL YEAR" PLAQUE SS1-1 SHALL BE USED AT YEAR-ROUND SCHOOLS ONLY.

SHEET A10  
TYPICAL ABUTTING SCHOOL ZONE  
(OPTIONAL)



UTAH DEPARTMENT OF TRANSPORTATION		REVISED
SALT LAKE CITY, UTAH		
DIVISION OF TRAFFIC AND SAFETY, DESIGN		
TOTAL	PERCENT	REMARKS

TYPICAL INTERSECTION
SCHOOL ZONE (OPTIONAL)

PROJECT NUMBER

NO.	DATE	DESIGN REV. BY	MAPS CORR. BY	PARCELS AFFECTED	REQUEST BY	REMARKS
ORIGINAL SUBMISSION FOR AUTHORIZATION						
DATE						REVISIONS

COUNTY \_\_\_\_\_

SHEET NO. A10

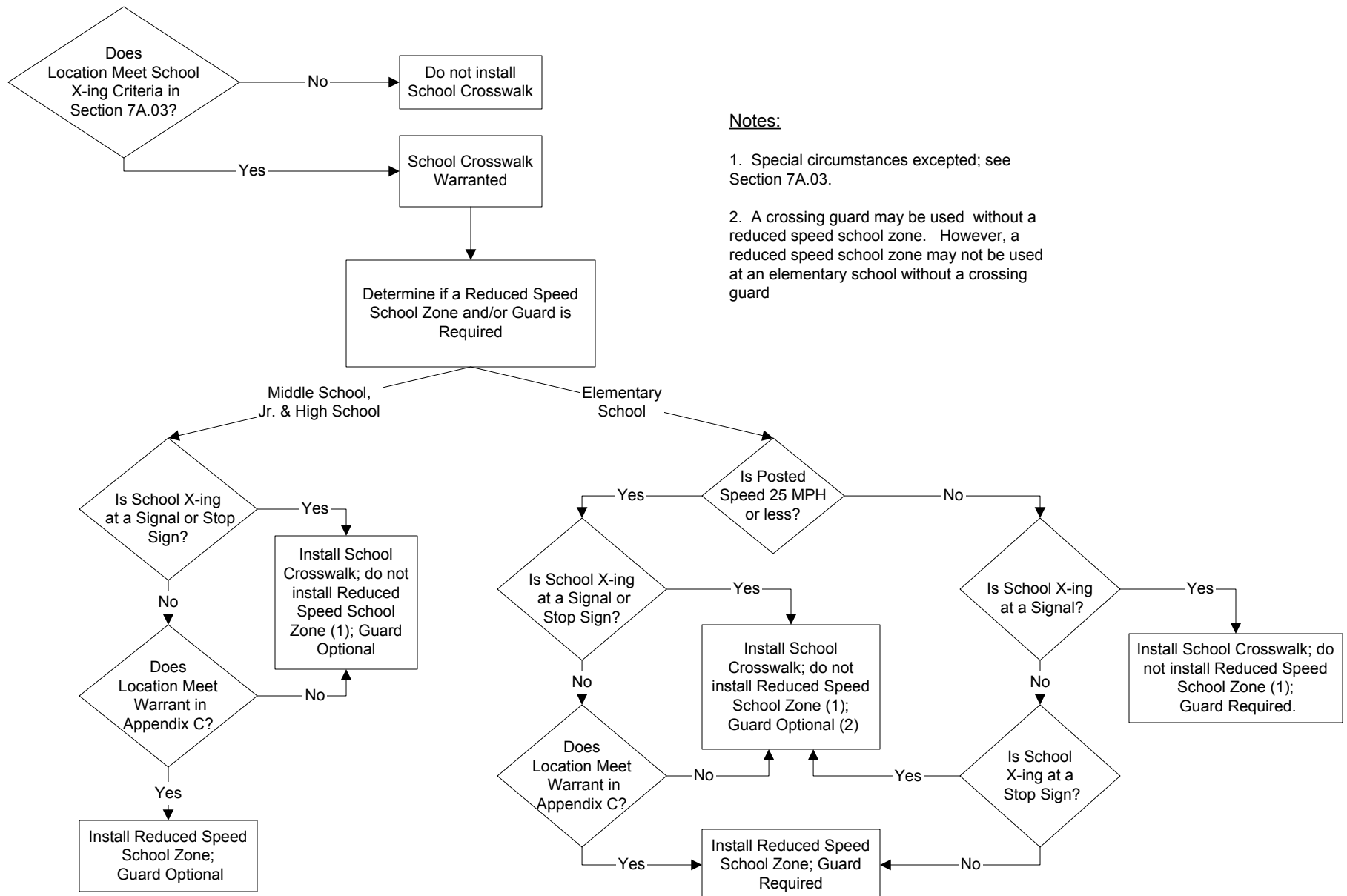


## **APPENDIX B**

### **School Zone Protection Flowcharts**

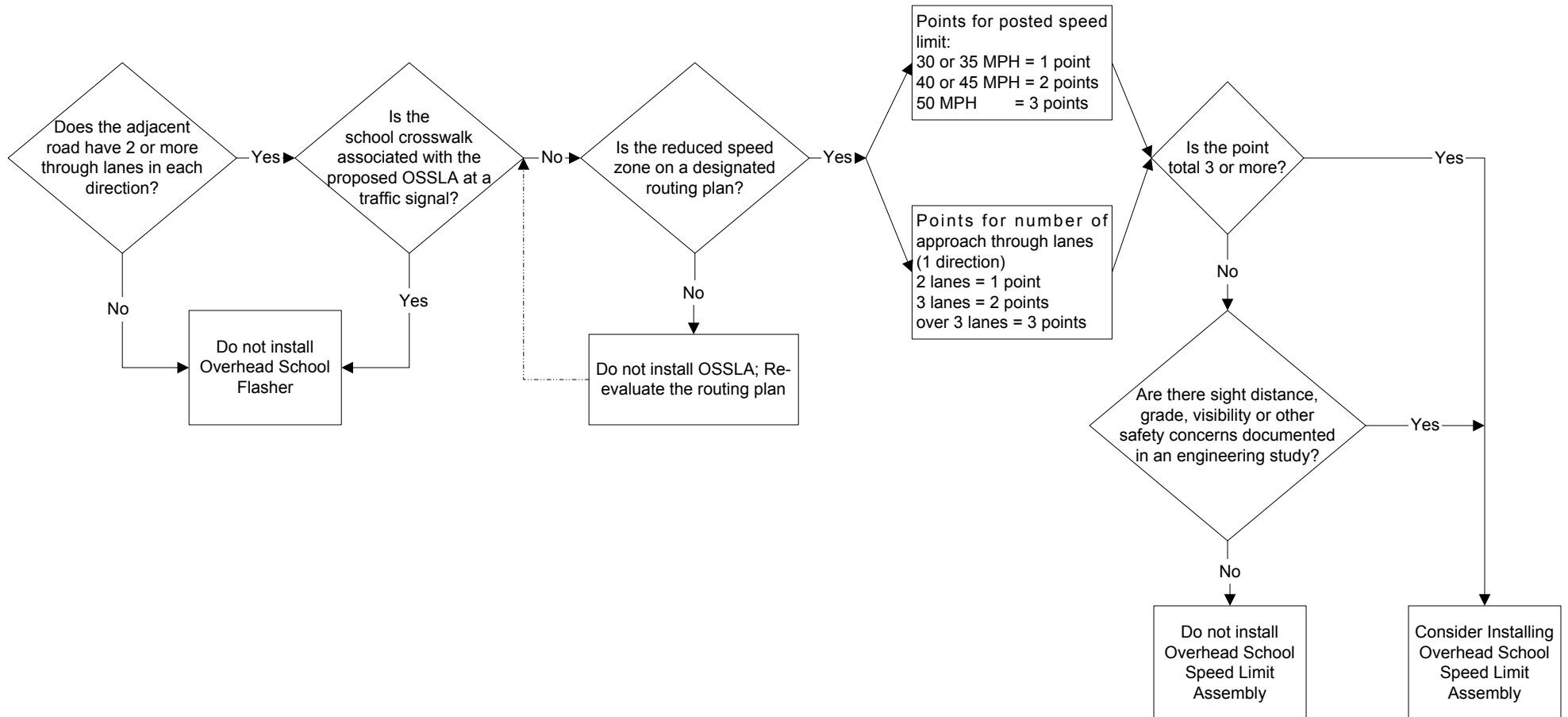
# Appendix B1

## Requirements for School Crosswalks, Reduced Speed School Zones and Crossing Guards.



# Appendix B2

Requirements for an Overhead School Speed Limit Assembly (OSSLA) in a Reduced Speed School Zone.





## **APPENDIX C**

### **Warrant: Reduced Speed School Zone**

WARRANT:  
REDUCED SPEED SCHOOL ZONE

Minimum points required for a Reduced Speed School Zone is 16 in an urban area, or 12 for an isolated rural community of under 10,000 population.

**CATEGORIES**

<b>Average Time Between Useable Gaps</b>	Maximum 10 Points
<b>School Pedestrian Volume</b>	Maximum 10 Points
<b>85th Percentile Approach Speed</b>	Maximum 5 Points
<b>Average Demand Per Gap</b>	Maximum 8 Points

A Reduced Speed School Zone **shall not** be installed under any of the following conditions:

1. The school pedestrian volume is 10 or less.
2. The posted approach speed exceeds 50 mph.
3. Minimum Stopping Sight Distance for the Crosswalk is less than that defined in the most recent edition of A Policy on Geometric Design of Highways and Streets, AASHTO.

**DEFINITIONS:**

1. **School Pedestrian Volume** - Includes all children between ages 5 and 18 that use the school crossing.
2. **Evaluation Period (EP)** - From forty-five (45) minutes before school starts in the morning until fifteen (15) minutes after school starts or from fifteen (15) minutes before school adjourns until forty-five (45) minutes after school ends.
3. **Minimum Usable Gap Time (MUGT)** - The minimum gap in traffic required for a single or group of school pedestrians to safely cross a given street width, determined as follows:

$$MUGT = \frac{W}{3.0} + 5.0 = \text{crossing time in seconds}$$

where:

W = pavement width in feet

3.0 = juvenile pedestrian walking speed in feet/second

5.0 = perception, reaction, and clearance time

4. **Total Usable Gap (G)** - The summation of Usable Gaps during the Evaluation Period. A Usable Gap is any gap in traffic equal to or greater than the Minimum Usable Gap Time (MUGT).

5. **Maximum Number of Usable Gaps (MNUG)** - Ratio of Total Usable Gap Time to Minimum Usable Gap Time during the Evaluation Period.

$$MNUG = \frac{G}{MUGT} = \frac{\text{Total Usable Gap Time during EP (Seconds)}}{\text{Minimum Usable Gap Time (Seconds)}}$$

6. A **“Demand”** - The arrival of one or more school pedestrians at the school crossing. The arrival of a single child is considered one demand. The arrival of a group of children is also considered one demand.

## **WARRANT**

### **1. Average Time Between Usable Gaps (M)**

Determine Average Time between Usable Gaps (M) by dividing EVALUATION PERIOD (EP, minutes) by the Maximum Number of Usable Gaps (MNUG).

$$M = \frac{EP}{MNUG} = \frac{\text{Evaluation Period (Minutes)}}{\text{Maximum Number of Usable Gaps}}$$

<b>POINT ASSIGNMENT</b>	
<b>Average Time Between Usable Gaps (minutes)</b>	<b>Points</b>
Less than 1	0
1.00 - 1.25	2
1.26 - 1.67	4
1.68 - 2.50	6
2.51 - 5.00	8
Over 5	10

Maximum      10

### **2. School Pedestrian volume**

Determine total number of school pedestrians (age 5 to 18) crossing at the study location during the EVALUATION PERIOD.

POINT ASSIGNMENT		
Urban	Rural	Points
10 or less	10 or less	0
11 - 30	11 - 20	2
31 - 50	21 - 35	4
51 - 70	36 - 50	6
71 - 90	51 - 65	8
Over 90	Over 65	10

Maximum 10

### **3. 85th percentile approach Speed**

POINT ASSIGNMENT	
Approach Speed	Points
20 and under	0
21 - 25	1
26 - 30	2
31 - 35	3
36 - 40	4
41 - 45	5
Over 45	0

Maximum 5

### **4. Average Demand Per Gap (D)**

Determine average demand per gap (D) by dividing total demands (TD) by the maximum number of usable gaps (MNUG). The arrival of a single child is considered one demand. The arrival of a group of children is also considered one demand.

$$D = \frac{TD}{MNUG}$$

<b>POINT ASSIGNMENT</b>	
<b>Average Demand Per Gap</b>	<b>Points</b>
1 or less	0
1.01 - 1.67	2
1.68 - 2.33	4
2.34 - 3.00	6
Over 3.00	8

Maximum      8

After point values are determined for steps 1 through 4, the sum of steps 1 through 4 are compared to the following standard to determine if a reduced speed school zone is warranted:

1. Minimum 16 points in an urban area; or,
2. Minimum 12 points in an isolated, rural community with population under 10,000.

## **SURVEY METHODS**

1. Personnel Requirements: One person
2. Equipment: Stop Watch and Field Data Form
3. Type of Survey:

a. Count school-age pedestrians within the Crosswalk area during the Evaluation Period (EP) to determine the School Pedestrian Volume. The Evaluation Period may be either in the morning or in the afternoon.

b. Obtain the 85<sup>th</sup> percentile approach speed. If the 85<sup>th</sup> percentile approach speed is unknown, the posted speed limit can be used.

c. Record (in seconds), on the field data form, each gap greater than or equal to the Minimum Usable Gap Time (MUGT) during the Evaluation Period.

d. Record, on the field data form, the Average Time between Usable Gaps (M), the school age pedestrian volume, the approach speed, and the Average Demand per Gap (D).

e. Evaluate the individual warrants, assign points, and tabulate points to determine if a reduced school speed zone is justified.

**UTAH DEPARTMENT OF TRANSPORTATION  
DIVISION OF TRAFFIC AND SAFETY**

**REDUCED SPEED SCHOOL ZONE WARRANT EVALUATION WORK SHEET**

ROUTE: \_\_\_\_\_ MP: \_\_\_\_\_ INTERSECTION: \_\_\_\_\_ COMMUNITY: \_\_\_\_\_  
 DATE: \_\_\_\_\_ BEGIN TIME: \_\_\_\_\_ WEATHER: \_\_\_\_\_  
 DISTRICT: \_\_\_\_\_ END TIME: \_\_\_\_\_ INVESTIGATOR: \_\_\_\_\_

**1. MINIMUM USABLE GAP TIME**  

$$\frac{\text{WIDTH OF STREET (W)}}{3.0 \text{ FT / SEC}} + 5.0 = \frac{\quad}{3.0} + 5.0$$

**2. MAXIMUM NO. OF USABLE GAPS (MNUG)**  

$$\frac{\text{TOTAL USABLE GAP TIME DURING EP (SEC)}}{\text{MINIMUM USABLE GAP TIME (SEC)}} = \frac{\quad}{\quad}$$

**3. AVERAGE DEMANDS PER GAP (D)**  

$$\frac{\text{TOTAL DEMANDS DURING EP (TD)}}{\text{MAXIMUM NO. USABLE GAPS (MNUG)}} = \frac{\quad}{\quad}$$

**4. AVERAGE TIME BETWEEN USABLE GAPS (M)**  

$$\frac{\text{EVALUATION PERIOD (MIN)}}{\text{MAXIMUM NO. OF USABLE GAPS (MNUG)}} = \frac{\quad}{\quad}$$

WARRANT	ACTUAL VALUE	ASSIGNED POINTS	MAXIMUM POINTS
1. AVERAGE TIME BETWEEN GAPS (M)			10
2. SCHOOL PEDESTRIAN VOLUME (NUMBER)			10
3. 85TH PERCENTILE APPROACH SPEED (MPH)			5
4. AVERAGE DEMAND PER GAP (D)			8
<b>TOTAL</b>			<b>33</b>

STANDARD (URBAN) = 16

STANDARD (Rural, isolated, population < 10,000) = 12

WARRANTED? (Yes/No)

**SKETCH**

USABLE GAP TIMES FOR SCHOOL PEDESTRIAN VOLUME									
TIME	USABLE GAP TIME (Sec)	TIME	USABLE GAP TIME (Sec)	TIME	USABLE GAP TIME (Sec)	TIME	USABLE GAP TIME (Sec)	TIME	USABLE GAP TIME (Sec)
Subtotal		Subtotal		Subtotal		Subtotal		Subtotal	

Total Usable Gap Time during EP = \_\_\_\_\_ Seconds (summation of the subtotals)

SCHOOL PEDESTRIAN VOLUME AND DEMAND TALLY (Five Minute Intervals for 60 Minutes)									
	Interval 1	Interval 2	Interval 3	Interval 4	Interval 5	Interval 6	Interval 7	Interval 8	Interval 9
PEDS									
DEMANDS									
	Interval 10	Interval 11	Interval 12	Remarks:					
PEDS									
DEMANDS									



## **APPENDIX D**

### **Utah Department of Transportation Contact Information and Region Map**

**Utah Department of Transportation  
Contact Information**

**UDOT Region 1**

169 North Wall Avenue  
PO Box 12580  
Ogden, UT 84412-2580  
(801) 620-1600

**UDOT Region 2**

2010 South 2760 West  
Salt Lake City, UT 84104-4592  
(801) 975-4900

**UDOT Region 3**

658 North 1500 West  
Orem, UT 84057  
(801) 227-8000

**UDOT Region 4**

1345 South 350 West  
Richfield, UT 84701  
(435) 893-4799

**Chief RR and Utilities Engineer**

Utah Department of Transportation  
Project Development Division  
4501 South 2700 West  
Box 148445  
Salt Lake City, UT 84114-8445  
(801) 965-4176

**Engineer for Traffic and Safety**

Utah Department of Transportation  
Traffic and Safety Division  
4501 South 2700 West  
Box 143200  
Salt Lake City, UT 84114-3200  
(801) 965-4273

Note:

UDOT Region Map on next page

